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ABSTRACT

This book, issued in observance of the Columbus Quincentennial and on the occasion of the 27th International Geographical Congress, addresses a broad range of contemporary topics including environmental change, dynamics of the world economy, human needs, wants and rights, political order and change, and contemporary cultures. The format is one of essays and complementary learning activities, including one essay and two activities in Spanish. Divided into five sections, section 1, "Environmental Change," contains the following essays: (1) "The Changing Use of Water in the Americas" (Lee); (2) "Streamflow" (Bock); (3) "The Effects of Volcanoes on the Landscapes and Peoples of the Americas" (Romey); (4) "Volcanoes and Human Activities in the Caribbean (Bencloski); (5) "The Global Effect of El Nino" (Caviedes); (6) "Teaching El Nino" (Prorok); (7) "Tropical and Temperate Rainforests" (Hansis); (8) "Humans, Owls, and Trees" (Beaman and Osborne); and (9) "Deforestation on Trial" (Sandmeier). Section 2, "World Economy," contains the following: (1) "United States Regions and the Global Economy" (Warf); (2) "Prisms of Promise--Selected Regions of the United States" (Marran); (3) "What is an 'American' Car? Global Interdependency in the Automotive Industry" (Rubinstein); (4) "The Automobile Worksheet" (Willman); (5) "Transportation and Urban Life" (Hodge); (6) "Planning a Light Rail System" (Speer); (7) "The Drug Industry in the Americas: The Andean Cocaine Connection" (Gerlach); (8) "Eradicating Coca" (S. Bednarz; R. Bednarz; and Walk) (9) "Editor's Note to Accompany 'A Planter's Day' by John G. Stedman" (Martinson); and (10) "Owning Slaves in Caribbean Colonial Plantation Culture" (Prorok). Section 3, "Human Needs and the Political Order," contains the following: (1) "Engendering the Discovery of the New World" (Momsen); (2) "Rural to Urban Migration in the Americas" (Whitsell); (3) "Regional Variation in Quality of Life in the Americas" (Greenow); (4) "Teaching the Quality of Life" (Crews); (5)

"The Far South of the New World: South American Antarctica and the Southern Islands" (Child); (6) "The Development of Antarctica" (Sandmeier); (7) "Migration Trends in the Americas" (Conway); (8) "The Exponential Factor and Population Growth" (Pierson); (9) "The World in a Grain of Sand: Global Restructuring and Neighborhood Activism in Tucson, Arizona" (Marston); and (10) "Tucson Neighborhoods:" (Priest). Section 4, "Contemporary Cultures," lists the following: (1) "Reading the City Landscape as a Primary Document" (Salter); (2) "How to Read a City" (Salter); (3) "Steel Drums of Trinidad" (Dendinger); (4) "The Recipe for Steel Bands" (Willman); (5) "Geography of Religious Belief Systems" (Weightman); (6) "Scales of Religious Diversity" (Prorok); (7) "Women and Food in the Caribbean: A Study of St. Lucia" (Fredrich); and (8) "Do You Know Where Your Next Meal Is Coming From?" (Sharma). Section 5, "Voices from the South," contains: (1) "Ciudades Primadas y Regiones en la America Latina" (Elbow); (2) "Buenos Aires: Poblacion, Desarrollo y Futuro" (Barros); and (3) "Los Andes y el Regionalismo en el Ecuador" (Guillen). Contains a selected bibliography and a list of contributors. (EH)

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The National Council for Geographic Education

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Revisiting the Americas

Teaching and Learning the Geography of the Western Hemisphere

Edited by
Tom Martinson, PhD
Auburn University
and
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Revisiting the Americas

Teaching and Learning the Geography of the Western Hemisphere

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and
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PATHWAYS

4

PATHWAYS IN GEOGRAPHY Series Title No. 4

Revisiting the Americas
Teaching and Learning the Geography of the Western Hemisphere

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Introduction

The year 1992 may well be remembered as the year the maps changed. Rapidly moving world events have triggered unification on one hand, and dissolution on the other. Political boundaries have been redefined, changing the way we perceive our world.

No less dramatic were the events of 500 years ago when, in 1492 Christopher Columbus sailing in search of Asia, made landfall in the islands of the eastern Caribbean. That fateful voyage did not mark the first contact between Eastern and Western Hemispheres: others had occurred before. It did mark, however, a point of change. Two worlds that had previously existed in relative isolation were irreversibly joined. For good or ill, peoples and cultures would never again be the same. Maps were redrawn, and the worlds they represented were seen in new light.

Just as 1992 is a time to reflect on the events of 1492, with all of the socio-economic and political changes that resulted, so too is it a time to consider the present status of the Western Hemisphere -- a time to *Revisit the Americas.*

In observance of the Columbus Quincentennial and on the occasion of the 27th International Geographical Congress, the National Council for Geographic Education has produced *Revisiting the Americas: Teaching and Learning the Geography of the Western Hemisphere*. This book addresses a broad range of contemporary topics including environmental change, dynamics of the world economy, human needs, wants and rights, political order and change, and contemporary cultures. The book does not attempt to provide comprehensive coverage, but rather offers a variety of topics reflecting the interests and expertise of the participating authors. The authors themselves represent a broad cross-section of the hemisphere, ranging from Argentina and Ecuador to the diverse regions of the United States.

The format of *Revisiting the Americas* is one of essays and complementary learning activities, including one essay and two learning activities in Spanish. Although intended primarily for the secondary level, many of the learning activities can be adapted for use with learners of any age. Likewise, the essays may be used not only as background by teachers, but also as excellent readings for more advanced high school students and for introductory college classes. A set of outline maps for the Western Hemisphere is included in the Appendix, as is a selected bibliography.

Educators are encouraged to use this volume to begin a journey of discovery and learning about the Western Hemisphere.

Martha B. Sharma
Vice President, Publications and Products
National Council for Geographic Education

June 1992

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In addition, other individuals generously contributed their time and expertise at various stages, each adding to the success of this project. At Auburn University, Terry Tidwell devoted many hours to wordprocessing the original manuscript. In Washington, D.C., Charles Metzger advised on layout and design, and Arlette Clayton edited the Spanish contributions. At Central Missouri State University, Kenneth Engelbrecht drafted all of the maps and figures. At Indiana University of Pennsylvania, Lisa Kuhns was responsible for desktop publishing of the final manuscript. Martha Sharma, Washington, D.C., Ruth Shirey and Louise Bem of Indiana, Pa., copy edited the final manuscript. Constance McCardle and others in the Central Office handled the many details involved with producing the book.

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June 1992

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I. Environmental Change

The Changing Use of Water in the Americas

Terence R. Lee
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> In their persistent efforts to come to terms with the uneven distribution of water in place and time across the plains and mountains of their continent, the American people have...dug several million wells, hacked out...waterways, bought water to irrigate... and drained an even larger area.
> —Gilbert F. White, *Strategies for American Water Management* (1969).

The peoples of the Americas have long controlled and regulated the flow of water in the hemisphere to improve their standard of living and the quality of their lives. As the economy has grown and technology has improved, the scale of their interference in the natural water regime has increased. All parts of the Americas have borne witness to massive construction programs of water control works in the last century. The construction of dams, canals and other water works are among the most impressive physical manifestations of the changing use of water resources in the Americas. An equally important factor is the changing nature of the use of the land as agriculture replaces natural forest and grassland and urban areas expand.

The Availability of Water

North, Middle and South America are among the more humid regions of the world, with more than 40 percent of the world's total stream flow, but the two continents also contain some of the most arid areas on earth (Table 1). Middle and South America, with an average annual precipitation of 1,560 millimeters, has the highest rainfall and runoff of any major region per square kilometer, equal to 25 percent of the world total. There are, however, some very dry areas. The Atacama desert in northern Chile, with practically no rainfall, is the driest region on Earth. North America is somewhat less humid with an average annual stream flow equal to 17 percent of the world total, or 8,200 cubic kilometers. Some two-thirds of the interior of North America is semi-arid or arid, with the driest areas in the Southwest. These contrasts in physical availability, when coupled with the variations in the density of human settlement, produce strongly contrasting patterns of use and transformation of the water resource.

Nature of the Interference with Water Flow

The use of water resources varies even more greatly than the availability of the resource. The Americas provide striking differences in the nature of human activities and in the density of settlement. There are vast areas of both North and South America still relatively free from human interference. Almost half the total land mass is still classified as forest and woodland and large parts of North America are virtually uninhabited tundra. There are some industrial regions of global significance with some of the largest concentrations of urban population to be found anywhere. The evolution of water use parallels the four main periods into which the history of the Americas can be divided. Each of these periods shows marked differences in both the nature of water use and in the rhythm of change in use of the water resource. These periods can be identified as: 1) The pre-Columbian period; 2) The period of European colonization; 3) The period of independence and early industrialization; and 4) The modern period

TABLE 1

Streamflow and Water Availability

Territory	Total Annual Stream-flow (km^3)	Percentage of Total Global Runoff	Area (km^3 x 10^3)	-term Annual mflow (^{3}/km^2)
North and Middle America	8,200	17.0	24,200	-
Canada	2,470	5.6	9,976	9
U.S.A.	1,940	4.4	9,363	7
South America	11,760	25.0	17,800	-
Brazil	9,230	20.7	8,512	4

Source: Shiklomanov, *Nature and Resources*, Volume 26, Number 3, 1990.

and the main period of industrial development.

The major pre-Columbian societies were characterized by sophisticated, if geographically restricted, water control systems for irrigation. Unfortunately, no estimates of the extent of these systems are available. We know their importance conditioned the colonial patterns of settlement and led to the development of major population concentrations in arid areas. Elsewhere, use of water was more casual in both the smaller agriculturally based societies and in the simpler hunting and gathering societies. In general, the pressure on the water resource was very low despite the sophistication of the Aztec and Inca irrigation systems and the large size of their major cities.

Irrigation was to remain an important use of water in the colonial period, particularly in Mexico and South America, and the first major dams were built towards the end of this period. In South America people remained concentrated in the drier areas with the exception of the coastal colonies in southern Brazil. In North America, the people were concentrated in the humid eastern coastal strip. The transformation of patterns of water flow were an integral part of colonial society in both the north and the south, although the major river systems were largely ignored except for their use for water transport. Water transport was the lifeline of the

colonial empires and the rivers we ively
used for this purpose, but few imp s were
made.

Following independence, there rked
growth in population in the new U tes and
in South America, particularly in and
Brazil, due to increased European tion. The
expansion of population was accor by
revolutionary changes in land use lture
spread beyond colonial and pre-C areas.
The change was most marked in th ation of
the valleys of the Mississippi and i
tributaries in the United States and
settlements in the west both in the tates and
Canada.

In South America too there wer hanges
in land use. The clearing of trees i n Brazil
and Chile, the plowing of the Pam gentina
and the development of the tropica plains of
Mexico and Central America had fects on
patterns of streamflow and rates of The Bío
Bío River in southern Chile, for ex ad
become completely closed to navi the
1880s because of sedimentation.

Beginning in the middle of the h
century, industry began to grow o scale
contributing to the latest era in the nation of

the water resources of the Americas. There was increasing demand for water control for irrigation and hydro-electric power generation and the dilution and transport of wastes. In the last 100 years, at an increasing rhythm, human demands have begun to affect water flows in all parts of Latin America. In the last fifty years natural patterns of flow have been transformed, even in the largest water systems.

Hydrologic Systems

The main orographical systems of the Americas, the Rocky and Andes mountain chains, give rise to three main types of hydrologic systems: the large river systems flow to the Atlantic Ocean and adjacent seas; the short streams of the Pacific watershed; and the intermittent streams of the areas of internal drainage. In North America this basic pattern is made more complex by the Appalachian Mountains that give rise to an independent Atlantic drainage system and by the chaotic drainage of the Arctic. Middle America is characterized by relatively short streams draining to both the Pacific and the Atlantic.

The Atlantic basins are the most extensive, and their five largest systems, the St. Lawrence, the Mississippi, the Orinoco, the Amazon and the Plata, account for two-thirds of total streamflow. These river basins are characterized by slight gradients with rivers that maintain relatively steady flows in the lower reaches. There are broad floodplain areas subject to extensive regular flooding in the United States, Paraguay, Argentina, Brazil, Venezuela and Colombia.

In contrast, the Pacific basins have steep gradients and their rivers have marked seasonal variations in flow. The areas of internal drainage, are mainly in the high plateaus of the Andes and the Basin and Range Province of western North America. These are small streams with very irregular patterns of waterflow.

Major Influences on Contemporary Patterns of Streamflow

Even today, use of water in the Americas is highly concentrated and associated with the major industrial and agricultural regions. In South America, much of the use of water is concentrated in coastal areas with only limited effect on the patterns of flow in the major drainage systems. In North America, there is much denser occupation of the center of the continent and more control over the major drainage systems, particularly the Mississippi. The Great Lakes-St. Lawrence system, despite the size of the population living in the drainage area and the economic importance of the region, is still almost entirely a hydrologic system with a natural drainage regime.

Where patterns of flow are affected by human action, the major influences are changes in land use and deliberate regulation of stream flow mainly by the construction of dams to store water, and interbasin diversions. Such regulation of stream flow on a large scale is largely characteristic of this century while change in the pattern of land use has been significant at all times and remains the more important means by which people influence and transform water flows.

Land Use

The growth of the gross geographical product and changes in the internal structure of the economies of the Americas have had a major impact on use of water in the last half century. Much of the change has been due to the increasing importance of manufacturing industry and services in contrast to primary production in both agriculture and mining. Latin America is the one region of the world where the agricultural frontier continues to expand. The area defined as arable land and pastures expanded in Central and South America at ten times the global rate between 1970 and 1985. Large areas have been deforested in recent years. In Middle America, 15 percent of the forest and woodland existing in 1970 was felled in the seventies. Similarly there are high rates of deforestation in the Amazon basin.

The proportion of the cultivated area under irrigation in the Americas has increased enormously since 1950 (Table 2). More than one-half of the total area under irrigation is in the United States. Other traditional centers of irrigated agriculture are found in Mexico, Peru, Chile, and Argentina, where large-scale irrigation pre-dates the arrival of the Spaniards. The largest increases in irrigation in the last two decades have been in parts of central and southern Brazil, in Middle America and in Cuba.

Regulation

The early dependence on agriculture led to the development of irrigation and, at least locally, river

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TABLE 2

Area of Land Under Irrigation, 1950-1988, by Country (1000 Hectares)

Country	1950	1960	1970	1980	1988
North America	**10,949**	**11,603**	**16,321**	**21,162**	**18,922**
Canada	254	346	421	580	820
USA	10,695	11,257	15,900	20,582	18,102
Middle and South America	**6,253**	**9,345**	**11,057**	**14,088**	**15,633**
Argentina	1,000	1,500	1,700	1,580	1,740
Belize	--	--	1	1	2
Bolivia	50	64	80	140	165
Brazil	132	141	796	1,800	2,600
Chile	1,300	1,363	1,180	1,255	1,260
Colombia	73	226	250	310	510
Costa Rica	13	26	26	61	115
Cuba	60	60	520	962	870
Dominican Republic	85	135	125	165	225
Ecuador	6	446	470	520	547
El Salvador	5	18	20	110	120
Guatemala	10	32	56	68	77
Guyana	50	100	115	125	130
Haiti	40	65	60	70	70
Honduras	20	50	70	82	87
Jamaica	17	22	24	33	34
Mexico	2,104	3,515	3,950	4,980	5,100
Nicaragua	2	18	29	80	85
Panama	8	14	20	28	30
Paraguay	12	8	40	60	67
Peru	1,200	1,212	1,106	1,160	1,240
Puerto Rico	26	39	39	39	39
St. Lucia	1	1	1	1	1
St. Vincent	--	--	1	1	1
Suriname	6	16	27	42	57
Trinidad	1	1	15	21	22
Uruguay	16	27	52	79	109
Venezuela	16	246	284	315	330

Source: Food and Agricultural Organization of the United Nations, *Production Yearbook*. Various years.
Note: Where data were not available for a year, data for the next nearest year were used.

regulation. Large dams were not built until late in the colonial period and are fundamentally a phenomenon of the twentieth century (Table 3). In 1900, there were only 227 dams in all of the Americas and over 90 percent of these were in the United States. A dam built on the Saucillo river in Mexico in 1750 to provide irrigation is the earliest European dam still in use. Irrigation has remained the major purpose of the greatest number of dams ever since. With increasing industrialization hydroelectric power generation has become a significant secondary purpose of dam construction and, in general, the dams built for this purpose also provide water storage and river regulation.

In the beginning, the building of dams and other regulatory structures was restricted to smaller streams. The growth in the demand for electricity and irrigation has led not only to a tremendous increase in the number of reservoirs and dams but also to the regulation of many of the large river systems such as the Mississippi in the United States and the Parana-La Plata basin in Brazil and Argentina. In North America almost all sites capable of generating significant amounts of power have been used. In South America less than 10 percent of the potential generation sites are as yet developed.

Conclusions

Despite the growth in regulation that began in the United States at the beginning of the century and reached its peak in the years between 1950 and 1980, many river systems are still structurally uncontrolled. Human influence on water flow is largely exercised through changes induced in vegetation cover. It seems unlikely that this balance in the nature of human interference will change in the immediate future. The agricultural use of water will continue to expand throughout the Americas despite the decline in the relative importance of the rural population.

The large metropolitan areas and some industries have significant influence on flow patterns and even more on water quality, but in terms of the Americas as a whole the impacts remain essentially local. The

TABLE 3

Americas, Number of Dams by Periods of Completion

Country	Before 1950	1951-1977	1978-1982	Total
Argentina	22	50	14	86
Bolivia	2	2	1	5
Brazil	142	301	46	489
Canada	189	305	86	580
Chile	34	29	4	67
Colombia	2	26	6	34
Costa Rica	--	3	1	4
Dominican Republic	--	2	7	9
Ecuador	--	4	--	4
Guatemala	1	--	1	2
Mexico	109	324	54	487
Paraguay	--	2	1	3
Peru	36	26	3	65
Uruguay	1	2	1	4
USA	1,543	3,503	292	5,338
Venezuela	9	42	13	64
TOTAL	**2,090**	**4,621**	**530**	**7,241**

Source: International Commission on Large Dams, *World Register of Dams*. 1984.

rate of dam building, especially in South America, will remain high and the number of regulated streams will continue to grow. Despite the existence of almost completely controlled rivers like the Colorado in Southwest United States and northwest Mexico, many of the streams in the Americas will continue to flow free from human interference in the foreseeable future.

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Streamflow: A Learning Activity to Accompany *The Changing Use of Water in the Americas*

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Introduction: The purpose of this learning activity is to show how water use is changing in the Americas.

Grade level: This learning activity is designed for grades 6-8.

Time Required: The time required to complete this learning activity is four days.

Themes/Key Ideas: Location, Movement, Regions

Concepts: Accessibility, frontier, land use planning, hydrologic cycle, landscape system, agriculture

Objectives: Upon completion of this activity students should be able to:

Knowledge:

A. List the major river systems of the Americas.

B. Analyze how water use has evolved from pre-Columbian times to the present day.

C. Describe the expanding use of water for irrigation.

D. Know that water is necessary for manufacturing industry.

E. Describe how dams have contributed to the regulation of water flow.

F. Recognize that streamflow impacts are essentially local.

G. Recognize that much of the streamflow of the Americas will continue to flow free from human interference in the foreseeable future.

Skills:

A. Develop geographic questions when presented with an issue.

B. Observe the human and physical characteristics of places.

C. Prepare maps, including title, scale, legend and orientation, using area and point data.

Attitudes/Values:

A. Appreciate bountiful resources

B. Understand the fragility of the environment

C. Understand destruction of irreplaceable resources

Materials:

Outline maps of North America and South America; butcher paper on which to construct enlarged outline maps; blue yarn; colored marking pencils; slides or pictures of rivers; copies of the tables from Lee's essay for each student: atlases; egg timer; flannel board; overhead projector

The Learning Activity

Procedure:

1. Open the lesson with several slides or pictures of rivers. These can be rivers with which the students are familiar.
2. Ask the students to write a short, interpretive statement about each slide or picture. (Three sentences; three minute time limit for each response).
3. Once this introductory activity is completed, ask individual students to share their responses with the class. As student responses are read, begin noting similar items mentioned in responses on the chalkboard.
4. Ask students why rivers and river systems are important, referring to chalkboard list when appropriate.
5. Ask students what human needs rivers and river systems meet, referring to list on chalkboard when appropriate. Some suggested answers include:
   a. Water for agriculture
   b. Water for manufacturing industry
   c. Water for drinking
   d. Water for recreation
   e. Water for economic gain
   f. Keeping ecological systems intact
6. Distribute outline river maps of North America, Central America and South America to the students.
7. On an overhead projector, place in sequence transparencies of North America, Central America and South America maps.
8. Using an atlas, have students identify the major river systems for each region.
9. As each system is identified, mark the river system in blue on the transparency and record the name of the river system in the margin of the transparency.
10. Have the students mark in blue the systems on their outline maps and write the name of each system adjacent to the marking.
11. When this activity is completed, place enlarged outline maps of the three regions on the wall or floor.
12. Have a container with pieces of blue yarn available.

13. As each river system is reviewed, have a student place a piece of blue yarn on the enlarged outline map to indicate the location of the system.
14. Refer back to introductory discussion on the importance and usage of rivers and river systems.

Suggested break point for day one of the lesson. Begin day two with a review of the river systems.

1. Review definitions of streamflow and water availability. Ask students if they know how much of the world's total streamflow is available in North America and South America.
2. Place answers on the board. (See Lee's essay.)
3. Distribute and discuss copies of Table One (Lee's essay) showing streamflow and water availability.
4. Have students construct a pie chart illustrating the percentage of total global runoff for each area.
5. Discuss with students the implications of the various percentages.
6. Have the students write a short paragraph (eight to 10 sentences) stating conclusions that can be drawn from the information.
7. Review with students the availability of water.
8. Ask students to imagine themselves as the earliest inhabitants of the land. (Include the two regions: North America and South America.)
9. Ask students to describe how they might have used the available water.
10. Record the responses on the chalkboard.
11. Using a flannel board, construct a chart showing the use of water for different historical periods. (See Lee's essay.)
12. Ask different students to attach the components of the chart to the flannel board.
13. Compare the responses on the chalkboard with those on the flannel board, noting which appear to be the most important. (Irrigation, water transportation, hydroelectric power, manufacturing/services.)

Suggested break point for day two of the lesson. Begin the lesson for day three with a review of lessons from days one and two.

1. Distribute and discuss Table 2. (See Lee's essay.)
2. Have students construct a line graph showing the increase of land under irrigation by country from 1950-1988.
3. Discuss how irrigation makes agriculture possible in certain areas, and why this is important to humans
4. Discuss the advantages and disadvantages of irrigation.
5. Discuss the growth of agriculture in certain areas and the impact on the land.
6. Ask students how water is regulated for irrigation and other uses.
7. Distribute Table 3. (See Lee's essay.)

8. Have students construct a bar graph comparing the increase in dam construction between 1950 and 1977 for selected countries.
9. Review the information contained on the outline maps, charts, and tables.
10. Discuss the impacts of dam construction.

Suggested break point for the day three lesson. Begin day four with a review of the previous lessons.

1. Review the information contained on the outline maps, charts and tables.
2. Distribute an outline river map of the different regions.
3. On a transparency, shade or circle the areas where the use of the rivers or river systems is high.
4. Have students shade in the areas on their outline maps.
5. Have students draw conclusions about how many rivers are unregulated by humans.
6. Have students work in groups to prepare reports on the pros and cons of extensive water regulation by humans.
7. The reports should synthesize information presented in the previous lessons.
8. The reports can serve as an evaluation for the unit and can be presented in both a written and an oral format.

The Effects of Volcanoes on the Landscapes and Peoples of the Americas

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Until the violent eruption of Mount St. Helens in 1980 killed more than 60 people most residents of the United States considered volcanoes to be negligible threats that largely affected people in other parts of the world (Saarinen and Sell, 1985; Findley, 1981). People knew vaguely about active volcanoes on Hawaii, and those interested in Alaska had read about the string of volcanoes that make up the Aleutian Islands. Occasional news reports mentioned volcanic catastrophes along the west coast of South and Central America. Volcanic landscapes were known to make up some scenic areas in the Pacific Northwest, but except for California's Mount Lassen, which erupted violently between 1914 and 1917, those volcanoes were thought of as dormant and safe. Katmai volcano in Alaska had erupted some three cubic miles of new volcanic material in 1912, nine times as much at Mount St. Helens (Tilling, n.d.), creating the Valley of 10,000 Smokes, but this had happened in a remote area far from humans.

The eruption of Mount St. Helens reminded Americans that volcanism can have tremendous effects in their own back yard. The peoples of South America enjoy the majestic grandeur of the Andes, but they pay a price when volcanic eruptions occur. The people of southern Mexico and Central America have frequently experienced the adverse effects of volcanism. When the first European explorers came to the new world they soon discovered that many of the Caribbean islands are volcanic. Most of North America was believed to be disaster-free.

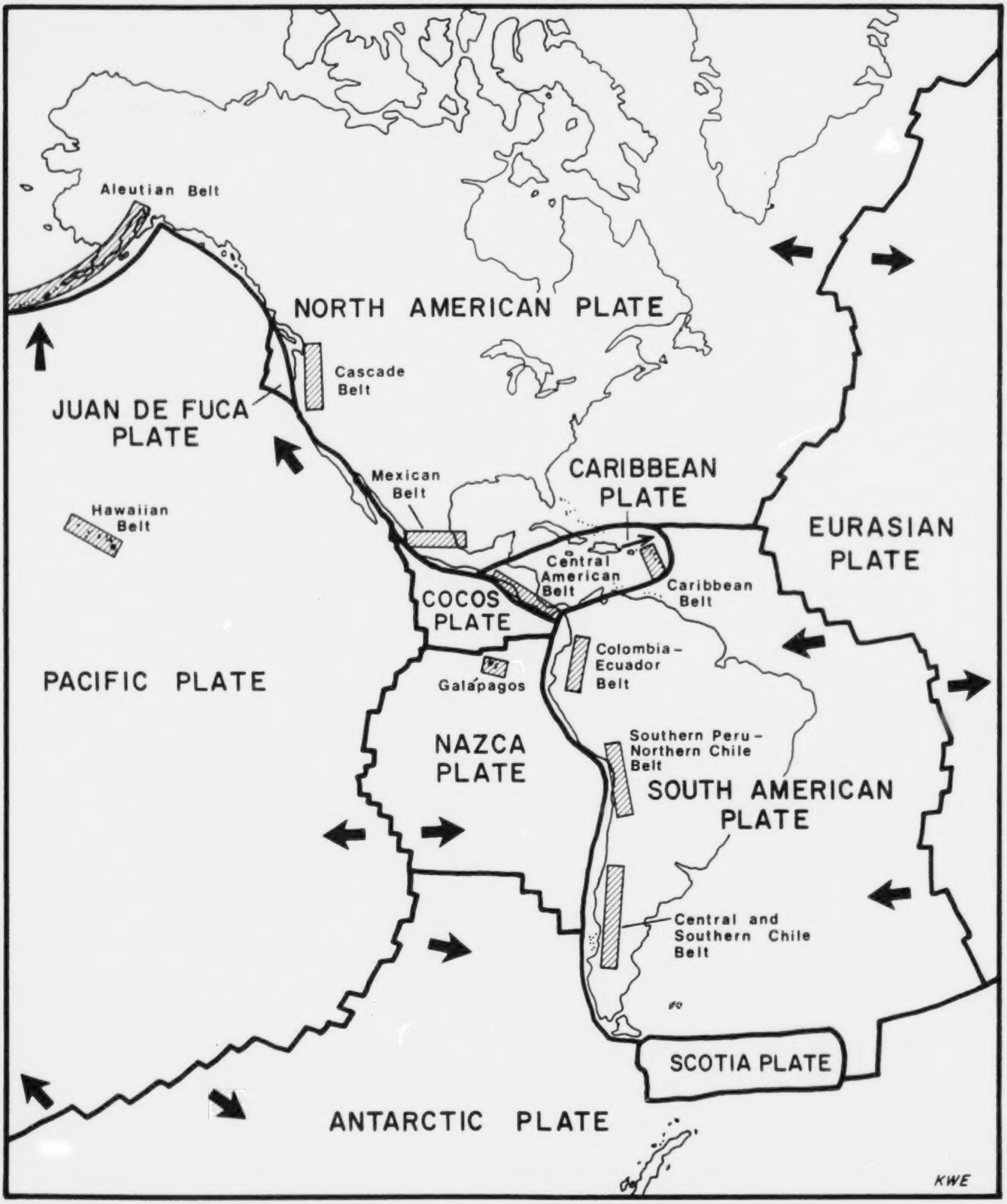
The first section of this essay reviews the distribution and recent eruptive histories of volcanic belts in the Americas. The second section examines the kinds of volcanic eruptions and their impacts. The concluding section considers predictions of volcanic eruptions in the future.

Distribution and Eruptive Histories of Active Volcanic Belts in the Americas

Most active volcanoes in the Western Hemisphere lie along the Pacific margin of North, Middle and South America. These volcanoes are located near the edges of massive crustal plates, that are constantly moving on the earth's surface. (See Dobson for an explanation of the movement.) Most active volcanoes on the American continents lie within 250 miles of the western edge of the huge American Plates that are grinding against the Pacific Plates that underlie the Pacific Ocean. In California, the Pacific Plate slides northward along the San Andreas Fault. At its northern edge it plunges below Alaska and the Aleutian Islands (Figure 1). Along the coast of Oregon, Washington and British Columbia, the smaller Juan de Fuca Plate plunges under the North American Plate. The Cocos, Nazca, and Antarctic Plates are all colliding with the American Plates along the coast of Central and South America. On the east, the volcanic arc of the Lesser Antilles Islands forms the eastern edge of the small Caribbean plate that is pinched between the North American, South American, Cocos, and Nazca plates.

Volcanoes not on plate margins include the Hawaiian Islands (included in this essay because they are part of the United States) and areas of volcanism in the western United States as far east as

FIGURE 1


Aleutian Belt
NORTH AMERICAN PLATE
Cascade Belt
JUAN DE FUCA PLATE
Hawaiian Belt
Mexican Belt
CARIBBEAN PLATE
EURASIAN PLATE
Central American Belt
Caribbean Belt
COCOS PLATE
Colombia-Ecuador Belt
Galapagos
PACIFIC PLATE
NAZCA PLATE
Southern Peru-Northern Chile Belt
SOUTH AMERICAN PLATE
Central and Southern Chile Belt
SCOTIA PLATE
ANTARCTIC PLATE
KWE

Colorado and New Mexico. These are currently explained as the effects of stationary "hot spots" caused by upwelling of molten material from deep within the earth's mantle.

The distribution of volcanoes in the Americas is characterized by narrow bands of volcanoes in seven principal concentrations, separated by gaps of 250 to 2,800 miles (Figure 1).

Beginning in the north, the first concentration of volcanoes lies in the Aleutian Islands and their extension along the Alaska peninsula, an arcuate chain of at least 72 volcanoes stretching 1,800 miles across the northern edge of the Pacific Ocean. At least 31 volcanoes have been active during the twentieth century, with the 1912 eruption of Katmai one of the world's most powerful eruptions. Mt. Augustine and Redoubt Volcanoes erupted in the late 1980s and early 1990s, creating ash problems for Anchorage and other Alaskan towns.

Southward from Anchorage, two dozen small, inactive volcanic centers dot the 1,400-mile gap to the next major concentration of recent volcanoes in the picturesque Cascade Range. This concentration extends over 600 miles from Mt. Garibaldi, British Columbia, to Mt. Lassen in northern California. These volcanoes, with the exception of Lassen and St. Helens, have not produced eruptions that have threatened the major population centers near them, but the major cones have the potential to erupt as violently as Mount St. Helens.

South of Mt. Lassen is a gap of about 2,800 miles in which little volcanic activity has occurred in historic time. The next major belt of currently active volcanoes, including the picturesque Popocatepetl, extends east-west for 700 miles across south-central Mexico at about the latitude of Mexico City. Among its 35 or so volcanoes are Paricutín, which grew in a farmer's cornfield in 1943, El Chichón, which killed some 2,500 people in eruptions in 1982, and Colima, which erupted in 1987.

Only 250 miles separate the Mexican volcanoes from the southeast-northwest trending Central American volcanoes that extend for 800 miles from the northwest border of Guatemala through El Salvador, Honduras, Nicaragua, and Costa Rica to Panamá. Several of these volcanoes have been active. Explosive eruptions of Arenal in Costa Rica, for example, killed 78 people in 1968. Fuego Volcano in Guatemala erupted most recently in 1988, covering the surrounding countryside with volcanic ash (Decker and Decker, 1989). (The human impacts of fallen ash are explored in the accompanying learning activity.) The arc of West Indian volcanoes lies 1,800 miles directly east of this Central American arc.

A 500-mile gap separates the Central American chain from the 550-mile-long Colombia-Ecuador chain of stratovolcanoes. These mountains extend from Colombia's infamous Nevado del Ruiz, whose mudflows in 1985 killed 25,000 people, to Ecuador's Sangay, which was almost continuously active from the early 1930s through the late 1980s. Cotopaxi Volcano's huge ash eruptions in Ecuador inspired several famous nineteenth century paintings by Frederic Edwin Church. At this latitude 600 miles offshore lie the volcanic Galápagos Islands, where Charles Darwin once gathered data.

A 1,000-mile gap intervenes between Sangay and the next volcanic concentration to the south, the southern Peru-northern Chile belt. It extends 600 miles from El Misti Volcano in Peru near the city of Arequipa along the border zone between Bolivia and Chile to 22,000-foot Llullaillaco, the world's highest active volcano in Argentina.

The southernmost band of volcanoes on the South American coast is separated by a 500-mile gap. The Central and Southern Chilean volcanic belt begins with Tupungatito near Chile's capital city of Santiago and extends 900 miles south. Calbuco Volcano has erupted nine times in the past two centuries, most recently in 1961, causing major damage to nearby farmlands (Decker and Decker, 1989).

How Volcanoes Work and How they Affect Landscapes and Peoples

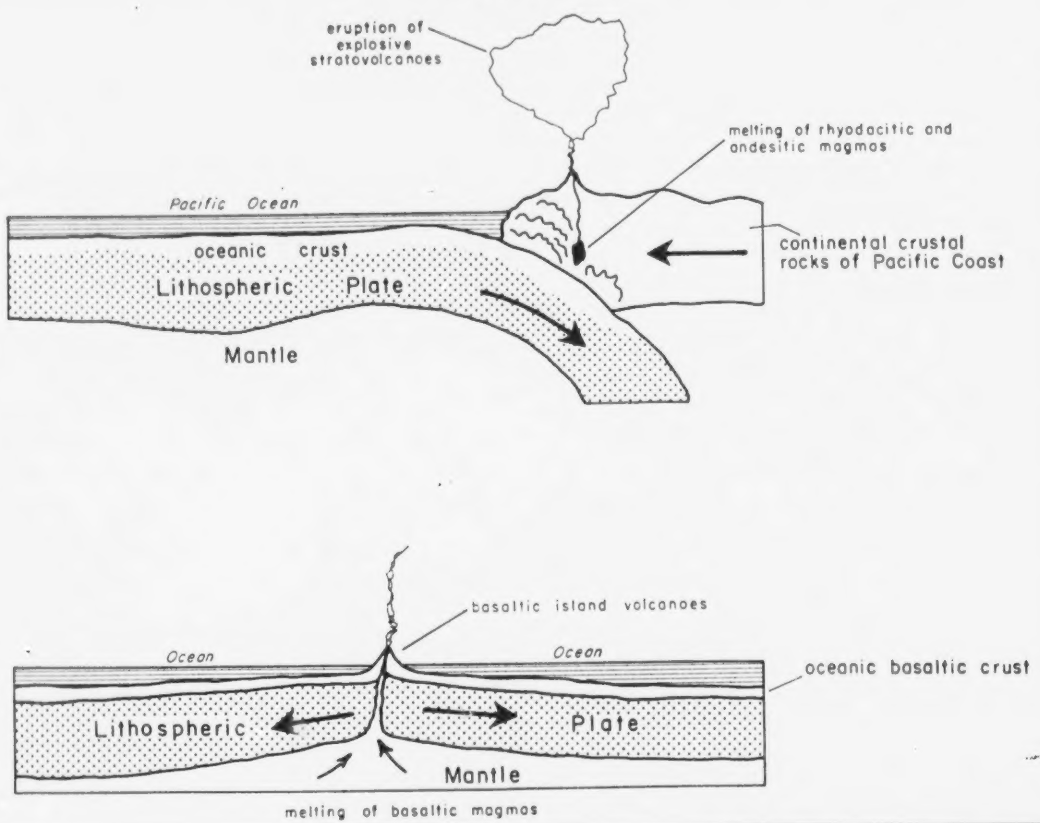
Volcanism takes two primary forms, with many intermediate and composite types. One primary form is violent and explosive; the second is quiescent with slowly-moving lavas. These two forms are distinguished by the materials they extrude and by their structural position on the earth's surface. The first, explosive type predominates on the American Pacific Rim and the Caribbean. The second, quiescent type is characteristic of mid-oceanic volcanoes such as the Hawaiian and Galápagos Islands, although there have been vast outpourings of lava from volcanoes and fissures on the continents in the more distant geologic past.

Explosive volcanism occurs where the earth's crust is being compressed. It produces andesitic material (named for the Andes) and quartz-and-potassium-feldspar-bearing rhyodacitic ash and lava, rich in silicon dioxide, sodium, and potassium. As seafloor materials of the Pacific Cocos and Nazca plates are forced beneath the continental and Caribbean Plates along subduction zones (Figure 2), pressure and heat cause continental materials to melt at great depths. These molten materials, more buoyant than the materials overlying them, eventually become so unstable that they rise along fractures in the earth's crust. These silica-rich materials are highly viscous and the gases trapped within them expand rapidly as they rise in the crust.

Upon nearing the surface, the material explodes, blasting its way to the surface and shooting clouds of heavy, hot ash and debris up to tens of thousands of feet into the air. Heavier portions of these eruption columns rapidly become unstable and collapse, rushing down the slopes of the volcano at speeds of up to a hundred miles per hour, demolishing everything in their path. Smaller, lighter particles of volcanic ash remain suspended in the air and are carried off by high-altitude winds. Some of these remain in the upper atmosphere for weeks, months, or even years, circling the globe and potentially affecting climates on a world-wide scale in the case of major eruptions.

Some explosions, such as the May 18, 1980, eruption of Mount St. Helens, take the form of a lateral blast out the side of the volcano that shoots debris directly down the side of the volcano. Lighter ash from that single eruption blanketed great areas of the northwestern United States, causing great damage to crops, vehicle engines and other machinery and bringing human activities to a virtual standstill for days or even weeks. Ash clouds from Augustine and Redoubt Volcanoes in Alaska in the late 1980's prevented the movement of air traffic in Anchorage, Alaska, for days. Ash from the El Chichón eruption in Mexico in 1982 may have triggered massive perturbations of the weather in

FIGURE 2


eruption of explosive stratovolcanoes
melting of rhyodacitic and andesitic magmas
Pacific Ocean
oceanic crust
Lithospheric Plate
continental crustal rocks of Pacific Coast
Mantle
basaltic island volcanoes
Ocean
Ocean
oceanic basaltic crust
Lithospheric
Plate
Mantle
melting of basaltic magmas

Australia, California, and elsewhere (Weintraub, 1982). An acidic, ashy haze from this eruption remained in the stratosphere until 1985.

The second major form of volcanism involves the relatively quiescent extrusion of basaltic lava, a material lower in silicon dioxide and richer in iron, magnesium, and calcium than the more viscous and explosive rhyodacitic and andesitic lava and ash. Major minerals in these lavas may include olivine, pyroxene, and calcium-rich feldspar. Such volcanic products originate in zones of the earth's crust that are under tension rather than compression (Figure 2). The earth's crust is thin in such areas and these lavas are produced by the melting of materials from the earth's thick mantle underlying the crust rather than by remelting of crustal materials. Basaltic material is more fluid than rhyodacitic melts, and enough of its gases escape before sufficient pressure develops for major explosions.

Nonetheless, even these "quiet" basaltic eruptions can send columns of molten lava hundreds of feet into the air. Lava flows move down slopes at velocities ranging from a slow creep to 25 miles per hour (Bullard, 1976). During the eruptions of Kilauea Volcano on the island of Hawaii beginning in 1983 and still in progress as of this writing, dozens of buildings have been engulfed by lava, although no lives have been lost.

Basaltic volcanism is not now a major factor in the Americas although great floods of basaltic lava covered large parts of Washington, Oregon, and Idaho during the mid-Miocene Period 12 to 16 million years ago (Beaulieu, 1972). There have been substantial outpourings of fissure basaltic lavas at the Craters of the Moon in Idaho as recently as about 2,000 years ago (Bullard, 1976).

Basaltic lavas may also be extruded in areas known for explosive eruptions. Paricutín Volcano in Mexico, for example, is a basaltic cone located in the same volcanic belt that contains El Chichon, whose 1982 eruption killed thousands. The great stratovolcanoes of the Pacific Rim and Central America have basalt flows interlayered with thick sheets of ash, indicating that there have been alternating periods of quiescent basaltic volcanism and explosive rhyodacitic eruptions. The two types have also been observed within the same eruption, leading to theories on the internal "plumbing" of volcanoes.

Volcanic Hazards and Predictability of Volcanism in the Americas

Active volcanic landscapes of the Americas make attractive places to live. They are scenic, and many have excellent soils weathered from volcanic rock material. They lie in coastal regions with good climates and ready access to marine transportation. Destructive eruptions are relatively rare, so any given area may appear safe enough most of the time. It is small wonder that so many people choose to live in close proximity to volcanoes. Nonetheless, people who live in such areas must realize that they risk their lives and property. They should be prepared to evacuate their homes and to sustain property losses at some time during their lives. Evaluating plans to evacuate and predictions of property loss is the theme of the accompanying learning activity.

The Aleutian Islands constitute one of the most hazardous volcanic zones in the Western Hemisphere but are so remote that they pose hazards to only small numbers of people. The Cascade Range Volcanoes have only recently demonstrated their potential as hazards with the 1914-1917 eruptions of Mt. Lassen and the current eruptive phases of Mount St. Helens. The United States Geological Survey's volcano observatory on the south side of Mount St. Helens has begun to reveal patterns that may be helpful in predicting future eruptions. The present eruptive phase of Mount St. Helens was correctly predicted by careful analysis of deposits from earlier eruptions and from various seismic and chemical precursory events, but the magnitude and form of the May 18 eruption were not predicted, and the public appeared unwilling to listen to advance warnings. The consequence was nearly a billion dollars worth of property damage and the unnecessary loss of several dozen human lives.

Recent events around the Long Valley caldera in eastern California have led geologists to suspect that the potential exists there for a destructive volcanic event. Minor evacuations have already been made in response to warnings, and merchants complain about the effects of these scares on their businesses. In the geologic past, this area was the site of massive explosive events. Yellowstone Park is also a major volcanic area, and monitoring there is part of an attempt to be prepared for eruptions.

The Mexican, Central American, South American, and Caribbean volcanic belts have all experienced major destructive eruptions during the past few decades, and it can be confidently predicted that such eruptions will continue in these areas. Most of the destructive volcanoes in these zones are not being monitored in any significant way. As we see in the learning activity, loss of life has been significant in Middle America and other regions. Just as the eruptions of Mt. Pelée (Martinique), La Soufriére (St. Vincent), El Chichn (Mexico), and Nevado del Ruiz (Colombia) killed thousands of people, it can be expected that future eruptions will kill thousands more. With improved warning systems and greater awareness of the risks, perhaps the numbers can be reduced. But many important population centers are in close proximity to dangerous volcanoes, and long periods between eruptions lull residents into a false sense of security.

Sometimes warnings and evacuations turn out to have been unnecessary. La Soufrière Volcano on Guadeloupe began to give precursory signs of a impending eruption in 1976. The French government, mindful of its failure to heed the warnings given by Mt. Pelée in 1902 with the consequent loss of 28,000 lives, evacuated some 70,000 people in spite of assurances by French volcanologist Haroun Tazieff that evacuation was unnecessary. When no eruption occurred, the government seemed to be discredited. The challenge remains to produce credible predictions in an uncertain environment.

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Volcanoes and Human Activities in the Caribbean: A Learning Activity to Accompany *The Effects of Volcanoes on the Landscapes and Peoples of the Americas*

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Introduction:

While volcanism shapes the landscape of the Americas by building mountain ranges and islands, it also causes loss of life and property. In 1902, for example, two devastating eruptions rocked the Lesser Antilles. On May 7, Mount Soufrière on Martinique destroyed the city of St. Pierre with a loss of 30,000 lives. In 1943, the eruption of Paricutín in Mexico covered villages and fields with ash. The volcano grew to 17,000 feet before becoming dormant in 1952. Volcanic eruptions affect human activities by producing lava flows, ash falls, mudflows (lahars) and toxic gases. This exercise examines the impact of volcanic ash fall on human activities in a hypothetical region in Mexico.

Purpose:

The purpose of this activity is to introduce students to the impact of volcanic eruptions on human activities and the use of maps in basic geographic decision-making processes.

The Situation:

The map in this lesson depicts a hypothetical agricultural region of south-central Mexico where wheat is the principal crop. This area is in one of the active volcanic zones described in the essay. Shown on the map are several small villages such as "Borlaug," named after the "father of the Green Revolution," who did his pioneering research with wheat in Mexico. The area is nearly flat. The size of the map is 180 miles by 180 miles and is divided into 81,400 square mile squares. The size of the study area was determined by using an ash fall probability model based on an eruption that ejected 1 cubic mile of ash into the atmosphere.

Since the map depicts a hypothetical landscape, a *graticule* referencing system is used instead of latitude and longitude. Reference squares cover the map surface.

This exercise is designed to be used in conjunction with lessons on the physical characteristics of the Americas with special focus on volcanic hazards. The activity can also teach and reinforce basic map-reading skills.

Recommended Grade Levels:

This lesson plan is designed to be used in middle school, high school and university geography and earth science courses.

STUDENT HANDOUT

Volcanic Impact Report

Introduction:

The accompanying isopach (ice-o-pack) map depicts an agricultural region in south-central Mexico that has been covered with ash from a recent volcanic eruption. Shown on the map are several small towns, roads and highways, and an irrigation project. The size of the map is 180 miles by 180 miles. The columns, extending north to south, are identified by numbers while the west to east rows are identified by letters. An individual cell or square can be identified by finding the correct row and column in which it is located. For example, the peak of the volcano is located in square E5, which is the intersection of row E and column 5.

Directions:

Determine the impact this volcanic eruption has had on the population of the region by completing the following exercises.

1. **Ash Depths:** Using your isopach map, estimate the depth of volcanic ash that accumulated at each of the following towns:

El Centro ________________________ inches

Santo Fuego ________________________ inches

Quetzál ________________________ inches

El Chichón ________________________ inches

2. **Population Evacuation:** Using your isopach map, estimate the number of people who will have to be evacuated from the towns. The following are the populations of all the towns on the map:

El Centro:	5,120
El Chichón:	1,510
Borlaug:	1,200
Ruiz:	500
San Ceniza:	120
Santo Fuego:	90
Quetzál:	35

Total population to be evacuated: __________

3. **Agricultural Effects:**

a. Identify the wheat growing areas that are covered with volcanic ash by listing the correct coordinates of all affected squares:

____

b. Estimate the total area of the wheat farming region that is covered with volcanic ash. (Procedure: Decide what percent of the area of each of the squares listed in Part A is covered with ash. Then convert the percentage to the total area in square miles for each square. For example, if 50 percent of a 400-square-mile area is covered with ash, 50 percent of 400 is 200 square miles. Finally, calculate the total area affected by adding up the values for all the squares.)

c. How many acres of wheat were covered with volcanic ash? One acre is about the size of a football field. (Procedure: To convert square miles to acres, multiply by 640. [1 square mile = 640 acres])

Total acres of wheat affected: ______________________

4. **Transportation Impacts:** Because of its proximity to the volcano, Highway 1 between El Chichón and Ruiz will be blocked by deep ash accumulations.

a. Plan and describe the best detour route between El Chichón and Ruiz.

b. Estimate the highway mileage between El Chichón and Ruiz along Highway 1 (use the bar scale on your Volcanic Impact Map.)

Miles: ______________

c. Estimate the highway mileage between El Chichón and Ruiz along your detour route.

Miles: ______________

d. Your detour route is __________ miles (longer) (shorter) than the Highway 1 route.

5. **Lake Nozama Irrigation Project:** Lake Nozama was built by the government to provide irrigation water during the dry summer season. The lake is supplied with water from Nozama River which is located to the north of the volcano.

a. How would the ash fall from the volcano affect both the river and the lake?

6. **Ash Fall Hazard Zones:** One benefit of past volcanic eruptions is that they provide information which may prevent the loss of lives and property from future eruptions. Using your isopach map and a compass, draw concentric circles around the volcano to indicate the following ash fall hazard zones:

   a. Zones of maximum ash fall hazard: Areas within this zone are subject to ash falls in excess of 8 inches. Draw a concentric circle to indicate this zone. The radius of your circle (from the volcano) is _________ miles.

   b. Limit of ash fall hazard zone: Draw a circle to indicate the approximate limit of the ash fall area. The radius of this circle is _________ miles.

   c. Which areas should be restricted to settlement? What changes to the transportation system would you recommend?

7. **Profile of Ash Accumulations:**

   a. Using Figure 1, draw a topographic profile of ash depths along line X-Y on your Volcanic Impact Map.

   Directions: Place the profile graph on the Volcanic Impact Map so that line X-Y on the graph lies parallel and adjacent to line X-Y on the map. At each point where an isopach touches the profile line locate, with a dot, the isopach value on the appropriate graph line. After all isopach values have been plotted on the graph, connect the dots with a smooth, curved line.

   b. Describe the shape of your isopach profile. What factors might account for that shape?

8. **Wind Direction:** This activity assumes that the volcanic eruption occurred under calm wind conditions. This assumption is reasonable, because it is very difficult to predict the wind direction that will exist at the time of a volcanic eruption. However, the wind rose on your Volcanic Impact Map shows the frequency of winds from different directions over a year. For example, 50 percent of the time the wind blows from the northeast.

   a. Refer to the wind rose, and lightly outline on the map the pattern of ash fall that would be expected 55 percent (sum of NE, ENE, E and ESE values on wind rose) of the time. (Note: The pattern of ash fall will be on the downwind side of the volcano. For example, if the wind blows from the east toward the volcano, the ash will fall on the western side of the volcano.)

TEACHER GUIDE

The following are answers to the questions on the student handout and background information that can be used to guide students through each subsection of the activity.

1. **Ash Depths**:

El Centro:	8 inches
Santo Fuego:	2.7 inches
Quetzál:	1 inch
El Chichón:	none (or traces of dust)

2. **Population Evacuation:** Only El Centro, which lies in an area where 8 inches of ash accumulated, should be evacuated. The population of Quetzál may have to be moved, because of danger of mudflows and flooding along the Nozama River.

   a. Total population to be evacuated: 5,155 (El Centro + Quetzál)

3. **Agricultural Effects:** Ash fall will affect agricultural productivity in several ways. Crop may "lodge" (bend) under the weight of the ash and ash-covered vegetation may be toxic to cattle. Ash on plant leaf surfaces can also reduce photosynthesis and therefore crop yields. The abrasive ash is lethal to beneficial insects such as bees and may damage plant leaf surfaces. The ash can also increase cost by requiring increased machinery repairs, and increased plowing to mix the ash with soil. On the ground, the ash affects water infiltration, surface albedo (reflectance), runoff, erosion, evaporation and soil temperature.

   a. Wheat growing region affected by ash fall: A5, A6, A7, A8, B4, B5, B6, B7, B8

   b. Total wheat area affected: 1,924 square miles. (Solution: 4 square miles (A5) + 160 (A6) + 40 (A7) + 120 (A8) + 132 (B4) + 268 (B5) + 400 (B6) + 400 (B7) + 400 (B8) = 1,924 square miles (approximate)

   c. Total acres of wheat affected: 1,231,360. (Solution: 1,924 square miles x 640 = 1,231,360 acres)

4. **Transportation Impacts:** Streets, roads, highways and airports may be closed if large amounts of ash accumulate. The problem is magnified if the ash mixes with rainwater. Heavy ash falls can also reduce visibility and turn daylight into darkness.

   a. The best detour route from El Chichón to Ruiz: Route 10 from El Chichón to San Ceniza; Route 5 from San Ceniza to Borlaug; unmarked road from Borlaug to Ruiz.

   b. Mileage between El Chichón and Ruiz along Highway 1: 145 miles.

   c. Estimated highway mileage between El Chichón and Ruiz along the detour route: 305 miles.

   d. The detour route is 160 miles longer than the Highway 1 route.

5. **Lake Nozama Irrigation Project:**

   a. The volcanic ash will mix with snow and ice on the volcano producing mudflows (lahars). As these mudflows enter the Nozama River, they fill in the channel and cause flooding. The ash-filled river channel will reduce water flow to Lake Nozama and cause its level to drop. The volcanic ash may also be transported downstream and cause the lake to be partially silted in. The mudflow could also dam up the river in square D5 creating a new lake.

6. **Ash Fall Hazard Zones:**

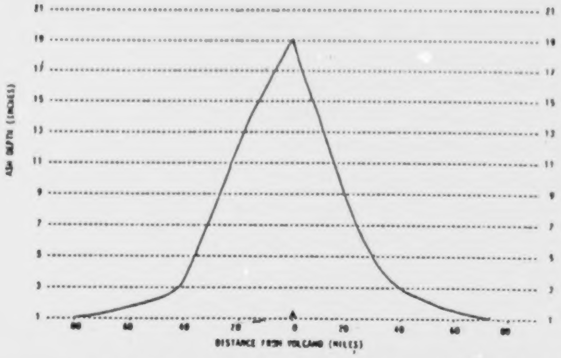
   a. Radius of zone of maximum ash fall hazard: about 30 miles.

   b. Radius limit of the ash fall hazard zone: about 80 miles.

   c. The area within the zone of maximum ash fall should not be settled, and the residents of El Centro should be relocated. The detour route seems to be the safest alternate route between El Chichón and Ruiz, because it lies at the edge of the expected ash fall hazard zone. The detour route is longer and, therefore, more expensive for all users. To reduce transportation cost among various users, it may be cheaper over the long run to reopen Highway 1.

7. **Profile of Ash Accumulations:**

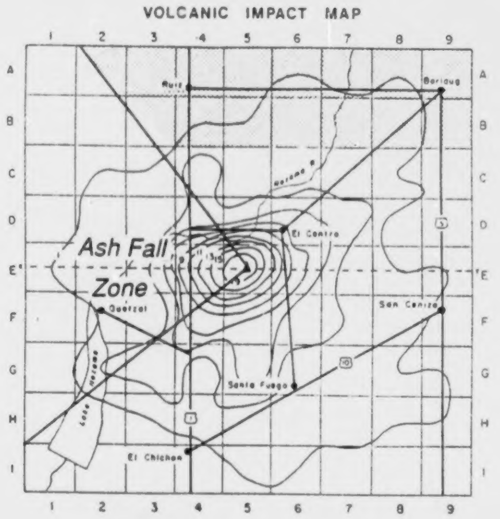
   a.



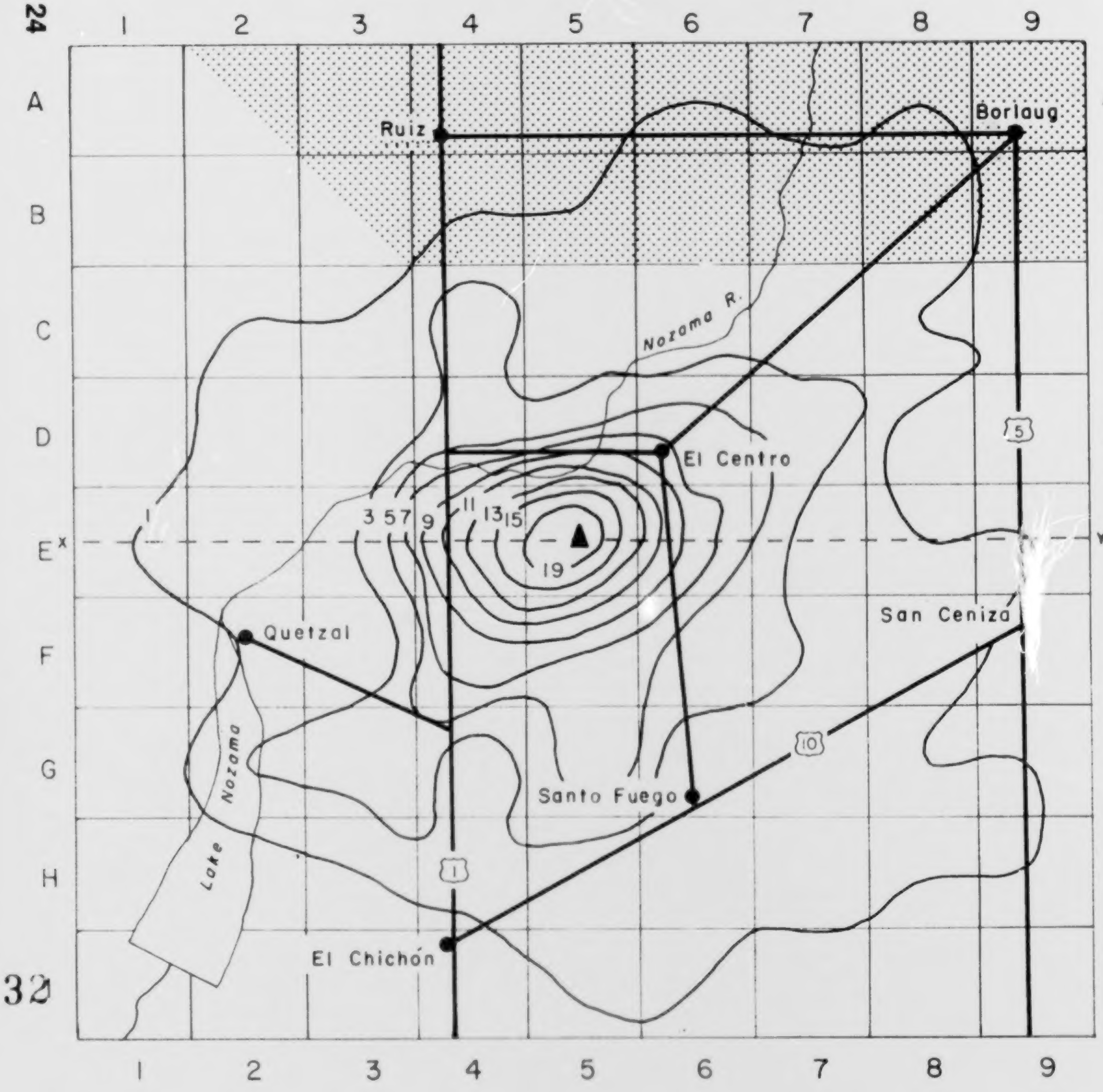
   b. The isopach profile slopes steeply away from the volcano both east and west. The line illustrates what, in geography, is called a "friction of distance" relationship (also called "distance decay"). That is, as distance increases away from the volcano, the depth of ash decreases. The distance decay profile for volcanic eruptions is a function of the size of the volcanic eruption, the height of the ash cloud, the size (texture) of the ash particles, wind direction and topography. As far as ash texture and distance decay are concerned, the heaviest particles fall nearest the volcanic vent, and lighter particles fall at increasing distances.

8. **Wind Direction:**

   Sketch of ash fall pattern:



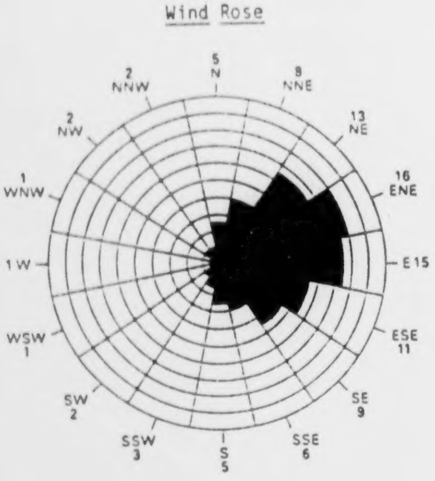
VOLCANIC IMPACT MAP


1 2 3 4 5 6 7 8 9
A B C D E F G H I
Ruiz
Borlaug
Nozama R.
El Centro
5
3 5 7 9 11 13 15
19
1
X
Y
San Ceniza
Quetzal
10
Nozama
Lake
Santo Fuego
1
El Chichon

LEGEND

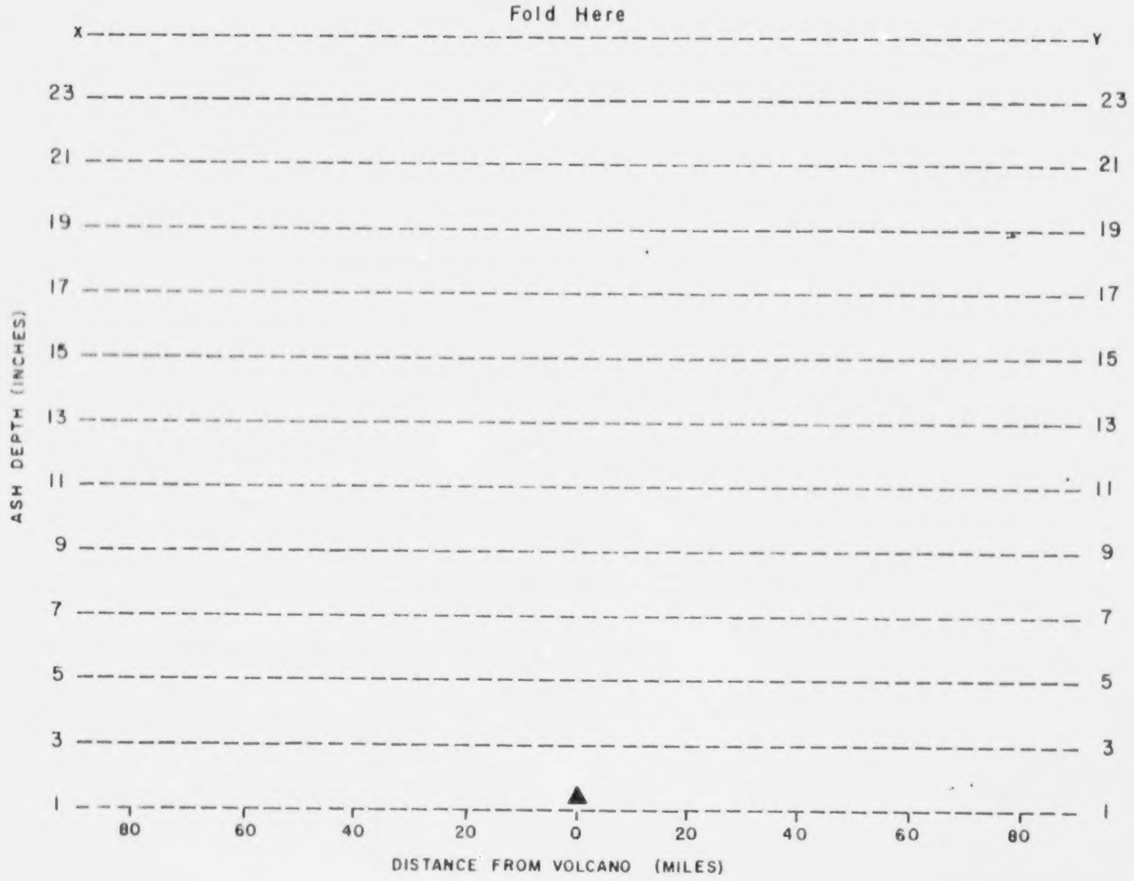
Wheat Farming Area	▨
Volcano	▲
Highways and Roads	—
Cities and Towns	●

0 20 40 60 Miles



Average percentage of time, annually, that winds blow toward the center of the wind rose from 16 compass directions.

ISOPACH PROFILE



The Global Effects of El Niño

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Since colonial times the fishermen in small villages along the northern coast of Peru occasionally have observed that the usually cool waters of the Pacific's Peru Current become warmer and their usual catch is replaced by warm water fish. Frequently these ecological changes are accompanied by concentrated rains that interrupt the constant dryness of this environment. This unusual event occurs near Christmas so is named El Niño in remembrance of the Child Jesus.

Lately what used to be regarded a phenomenon of local significance has become the term for a climatic and oceanic anomaly of worldwide extent. El Niño refers to the unusual warming of the eastern tropical Pacific Ocean at the beginning of the south-hemispheric summer (October though December) which extends towards the coasts of southern Ecuador and northern Peru at the height of the summer (January through March). The equatorial air masses that glide eastward on top of the warm equatorial waters cause torrential rains not commonly experienced in the hot, very dry desert of coastal Peru. Concentrated rains swell the ephemeral rivers flooding valuable farmland destined to produce corn, sugar cane, coffee, and cotton. Dwellings, roads, bridges and sewage works are damaged. The high waters erode valuable riverine fields and deposit silt, sand and gravel further inland. Contamination of drinking water becomes a problem, typhoid outbreaks threaten the people's health and food shortages exacerbate the endemic poverty of the region. Torrential rains and floodings raise the environmental humidity leading to mosquito multiplication and triggering malaria outbreaks. Noxious insects and uncommon reptiles descend into coastal areas from the tropical forests of the Andean foothills.

Nature suffers from El Niño. The strength and width of the Peru Current is noticeably reduced by the invading warm waters. In normal years, the cold Peru Current is activated by the superficial shearing of the southeastern winds blowing out of the South Pacific high pressure cell (centered about 30 degrees south and 110 degrees west), which causes the upsurge of cooler, deeper waters in certain spots along the Peruvian and Chilean coast. These upwellings are particularly rich in carbon, oxygen and nitrate, and constitute centers of high phytoplankton and zooplankton production that support large swarms of fish. Main species in this marine ecosystem are anchoveta (*Engraulis ringens*), pilchard (*Sardinops sagax*), jack mackerel (*Trachurus murphyi*) and hake (*Merluccius gayi*). Living in large schools, these fish prey on each other's larvae and young and build the central link of a trophic chain that sustains marine mammals such as seals and whales and a myriad of sea birds including gannets, cormorants, pelicans and penguins. On the rocky islets and steep cliffs used by these birds as nesting grounds, their excrement, *guano*, has accumulated over thousands of years, producing a high quality garden fertilizer.

The bountiful marine riches of the Peru Current allow the development of one of the world's largest fisheries along the Peruvian and northern Chilean coast. Processing plants transform fish into fish meal used as cattle feed in Europe and the United States and fish oil, a base for varnishes and fine lubricants. In the early 1970s Peru caught 10.5 million metric tons of fish and produced 4.7 million tons of fishmeal, placing that country at the top of the fishing nations of the world. More than 47 fish processing plants operated in 24 coastal towns, employing nearly half a million people.

In abnormal years, El Niño years, the overlapping of cold water by warm water and the failure of ocean upwelling reduces primary productivity of phyto- and zooplankton, thus causing great fish mortality and impeding normal spawning. The sea birds and marine mammals that feed on these fish starve on the beaches and rookeries of many central Pacific islands, the Galápagos Islands, southern Ecuador, Peru and northern Chile. Numerous coastal communities see their main source of income dwindle, sometimes over several years, as the fishing plants close down. After the El Niño occurrence of 1972-1973 the anchovy stock suffered a collapse. The recovery of this mainstay of Peruvian-Chilean fisheries has been slow and is still in progress twenty years later.

In the absence of fish meal, European and North American cattle breeders turned to soybean meal as a suitable supplier of protein. Since 1974, worldwide soya cultivation has more than tripled, with Brazil, Canada, the United States and Australia becoming the major suppliers. The collapse of the anchovy stock due to El Niño had, then, a major influence on global agriculture.

The Distant Effects of El Niño

South America. The excessive warming of the tropical Pacific during El Niño events constitutes an enormous input of latent energy (heat) and humidity into the lower atmosphere. The surplus is transported far away, increasing rainfall in the highlands of Ecuador and in some areas of the mountains of Colombia. In the interior of the Río de la Plata basin, particularly in northeastern Argentina, Paraguay and southern Brazil, increased autumn rainfall causes extended flooding of fluvial plains.

Due to atmospheric compensating processes, tropical circulation is upset, resulting in droughts in the Altiplano of Bolivia. Llama herds are decimated for lack of pastures and the yield of potatoes, a valuable staple of highland Indians, declines drastically. The ensuing famines lead to high infant mortality, social dislocations and outmigration.

On the other side of the continent, the same anomalous circulation causes localized droughts in northeastern Brazil. Ensuing food shortages and lack of water pose serious supply problems in cities overcrowded by fleeing rural populations.

Similar hardships, though not as intense, are felt along the Caribbean coast of Colombia and Venezuela, in many islands of the Antilles, and in vast tracts of Central America. In Guatemala and southern Mexico El Niño brings droughts, while in Panama, Costa Rica and Nicaragua precipitation reaches higher-than-normal levels. It also has been discovered that hurricane frequency in the tropical Atlantic declines during El Niño years due to cooler ocean conditions and to stabilizing low atmosphere effects. Inversely, an unusually cold Pacific Ocean (caused by an Anti-Niño condition) is related to high hurricane frequency in autumn. During pronounced El Niño years several counterbalancing mechanisms are activated, causing increased precipitation in some regions, drier conditions in others, warm waters in certain segments of the ocean, and cold waters in others. The El Niño phenomena is worldwide.

North America. During winter when El Niño occurs in the tropical Pacific, storm frequency in the northern Pacific Ocean increases and the storm waves produce major damage along the west coast of the United States. In the Central Plains, heavy snowfall occurs in early or mid-winter and heavy flooding results from the melt waters. In the U.S. southeast, winter precipitation is heavier than usual, leading to extensive flooding in the lower Mississippi. Northern Florida experiences higher than normal winter and spring precipitation while the southern part of the peninsula shares in the generalized drought of the Caribbean basin.

East Asia and Oceania. Oceanic warming also affects the western margin of the Pacific Ocean, including far East Asia. The Philippines, southern China and southern Japan receive abundant rainfall. Torrential rains trigger landslides in hilly country and damaging floods in low-lying areas where the rice fields are located. Simultaneously in the northern segments of China and Japan El Niño promotes cooler and drier conditions.

The effects of El Niño are different in Indonesia and Australia. During the southern summer most of the Australian continent is affected by drought while in the northern summer rains are reduced or totally absent. The droughts in Australia and Indonesia are not isolated events but are closely related to the atmospheric and oceanic anomalies that beset the Pacific side of South America.

India and Sub-Sahara Africa. Oceanic El Niño events influence the climate of regions west of

Australia and Indonesia and on the land masses of India and Africa. Prolonged dryness in India and the Sahara is caused by failure of the summer rain-bringing monsoon to arrive. The failure is related to the abnormal strengthening of South Asian high pressure centers, which is especially pronounced when El Niño is in progress in the eastern Pacific.

Over the eastern part of Africa, and affecting especially Somalia, Ethiopia and Sudan, the failure of the summer monsoon leads to decimating droughts, crop damage, starvation of cattle and famine. Several times during the last century prolonged droughts (spanning consecutive summers) have occurred not precisely in the same year as El Niño-related events in the tropical Pacific, but rather immediately following these episodes.

The geographic investigation of the global effects of El Niño has led to its recognition as one of the best examples of an integrated natural system, one that has significant human, social and political implications.

Teaching El Niño: A Learning Activity to Accompany *The Global Effects of El Niño*

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Introduction:

Until recently the climatic event known as El Niño in Chile and Peru was believed by climatologists to be a local phenomenon. Today, El Niño is known to have hemispheric and even global effects. The following learning activity is designed to help students understand the hemispheric and global impact of an environmental event specifically associated with a certain place. It is also important for students to understand El Niño as a climatic event and not as a single weather event. El Niño develops over time as a massive system that impacts local weather on the Chilean and Peruvian coasts for an extended period of time and in fact it influences weather events all over the world. In this sense it might be considered a prevailing condition that occurs periodically.

Grade Level:

Students of grade levels 9 and 10 are targeted for this project, but the activities can be adapted to lower or higher grade levels.

Time Required:

This unit is designed for two to three weeks (10-15 class periods) and it can be adapted to fit a longer time frame.

Themes/Key Ideas: Human - environment relations; place

Concepts:

Climate, environmental hazard, ecosystem, bioregion, cultural ecology, food chain, weather.

Objectives: Learning outcomes include the knowledge and skills elements that follow.

Knowledge:

A. Understanding El Niño as a climatic event

B. Understanding the impact of El Niño on specific environments

C. Understanding the types of data and their patterns in relation to El Niño events

D. Understanding the role of climate in regard to the character of place

E. Understanding that major shifts in the climatic character of a place have far-reaching effects for local environments and inhabitants

F. Understanding the hemispheric implications of El Niño

Skills:

A. Distinguishing between geographic and non-geographic information

B. Finding relevant places on maps or in atlases

C. Collecting relevant data

D. Graphing relevant data in a meaningful manner

E. Interpreting relevant data

F. Practicing both oral and verbal communication skills

Materials:

A. Outline maps of the Western Hemisphere (class set)

B. Access to library resources on:

1) the climate of the coastal areas of Peru and Chile

2) recent newspaper and magazine articles on El Niño

3) information on the environmental regimes associated with coastal Peru and Chile a ey are affected by El Niño

d) appropriate geographical and historical characteristics of nations of interest (in rega Niño)

e) the economic impact of El Niño on the nations of interest

f) temperature and precipitation data for your local area for selected years of interest. ith a local television station, the airport, or a nearby university library for this informatio

C. The map Changes in El Niño from *Maps on File*

D. Figures of information provided here

E. Graph paper

F. A world atlas or world wall map for reference to points relative to the lesson

G. César Caviedes' 1984 professional journal article titled: El Niño 1982-83, *Geographic* , will be helpful to the teacher.

The Learning Activity

Background: The following explains the origin and reading of the associated tables of information included in this lesson:

Annual Fish Captures by Peru and Chile are altered during an El Niño. The 1972-73 El Niño ruined Peruvian fisheries and Chilean fisheries began regaining their catch from 1974 onwards. The significance of these figures lies in the comparison of fish catches during an El Niño and the catch in previous years. Because of changing technology and investment in this economic pursuit, it takes an El Niño of historic proportions to see the potential damage El Niño does to the catch. The 1972-73 event is such an example. The Peruvian catch in tonnage in 1971 was 10,528 and dropped to 4,725 tons and 2,328 in 1972 and 1973 respectively (Handout 1).

Southern Oscillation Indices (Handout 2), indicate how strong the atmospheric circulation is during Anti-Niño years (high positive values) and how weak it is during El Niño events (negative values). The index is calculated by subtracting surface pressures in Darwin, Australia from surface pressures on Tahiti, Society Islands.

Sea Surface Temperatures at Puerto Chicama, Peru (Handout 3) are taken at the northern Peruvian port and have been used as an indicator of how warm the Pacific Ocean is during an El Niño event and how cold it is during an Anti-Niño event.

Rainfall in Piura, Peru (Handout 4) is used as another indicator of El Niño. Piura is a desert weather station in the classical Peruvian El Niño region. The values of precipitation that are above +1 standard deviation (in this case 75 mm or more of precipitation) are El Niño years and the values that are below -1 standard deviation (in this case 13 mm or less of precipitation) are Anti-Niño years.

The Maximum Daily Discharge of Peruvian and Chilean Rivers from December through May (Handout 5) reveal the intensity with which torrential rains swell these rivers during an El Niño event. The second table of information regarding runoff of a number of regional rivers from page 279 of Caviedes' article, El Niño, 1982-1983, gives excellent comparative data. The 30-year averages for the runoff of these rivers is significantly less than the runoff for an El Niño year. The dramatic increase in runoff during an El Niño episode often causes severe flooding events.

Learning Strategies:

A. Introduce the region where El Niño emerges (western Peru and Chile) to the class in terms of location, natural characteristics, population, settlement and history. Atlas and map work would be necessary here. Then introduce the term El Niño, its significance as a climatic event and natural hazard to the region. Make sure the students realize the influence of El Niño on the relationship of the local people to their environment and that El Niño helps to give the region its character in terms of place. (One to two class periods.)

B. Explain the phenomenon known as El Niño and its counterpart Anti-Niño. Describe the types of information (explained above) that are used by climatologists to designate a year as El Niño. Also emphasize that it is very difficult to predict El Niño so that its effects might be minimized. Go over the concepts of environmental hazard, bioregion, food chain and ecosystem if these are to be important in an expanded lesson. Otherwise Environmental Hazard is the key concept to be understood for the rest of the lessons. (One to two class periods.)

C. Present the sets of data provided in this lesson to your students and have them graph the data. (Data are provided for the teacher for ease in facilitating this lesson). Divide the class into groups with at least four members to a group (more members would mean that some students could work together in pairs) and assign one of each of the data sets to each member of a group. The result would be that each group be able to present a graph for each of the four major data sets (fish catch, annual rain, sea surface temperatures and southern oscillation values). Use this class period initially to instruct the class on how to graph the data; then allow them to work on it in class. This may take two or three class periods depending on the level of the students and the amount of time you want to spend discussing the results. When the graphs are complete each student group should then compare them and identify the El Niño (and Anti-Niño) years themselves. Do not indicate this before the assignment. The groups should present their graphs and data to each other and compare the list of years selected as El Niño years. Discuss their presentations and help them to analyze the data through the discussion. (Four to five class periods altogether)

D. Focus this lesson on El Niño as an environmental hazard. Discuss storms and intense rainfall, flooding and its impact, changes in the natural habitat (increases in the mosquito population, changes in fish species and their respective populations, changes in the bird population as well as seals, dolphins and sharks, and devastation to crops) and the impact on human health (such as malaria and tuberculosis). The accompanying essay and Caviedes' article El Niño, 1982-1983 article are good resources for the teacher here. (One class period)

E. Have the students collect for themselves or provide to the students monthly average precipitation and temperature patterns for the local area. Try to get data that goes back to the 1960s for comparative purposes. Have the students form groups again and have each group graph portions of this data. If this project is coordinated then the graphs can be connected to form one long graph to be displayed on a bulletin board. Using the information indicating El Niño and Anti-Niño years since the 1960s, have students identify these years (and the appropriate months) on the class graph. Help the class as a whole to determine if temperature and precipitation patterns are markedly different for their local area during El Niño or Anti-Niño. Discuss the relative impact of El Niño events on local weather patterns. (Two to four classes.)

F. Discuss the global impact of El Niño events. The accompanying essay describes the role of El Niño in various major regions of the world (North America to India and Sub Sahara Africa). Give students a brief introduction to this global impact and then assign students (in pairs or groups) students the task of researching this impact. Newspapers and news magazines are valuable resources for the 1970s and 1980s El Niño events. Have students select a region and then prepare a scrapbook or poster with an accompanying essay that depicts the impact of El Niño for that region. Students can share their projects and discuss them. (Three to five class periods or this can be a home assignment to be discussed on a designated day.)

Conclusion:

Tie together the various levels and types of material presented throughout the learning activities. Emphasize the connections between one's community and one's nation and then the hemisphere and the world.

Evaluative Methods:

Producing individual reports, creating maps, writing essays, developing group projects, and participating in class discussion give the teacher numerous opportunities to evaluate student performance in a manner consistent with the school's grading system. If the teacher feels it is necessary, an exam may be prepared. Otherwise, both qualitative and quantitative evaluation are possible throughout the course of the project.

Alternative Strategies: Team teach with the science/biology class.

Enrichment Strategies:

Visit a local weather station to see how some of the data used in the classes are collected. Ask a local meteorologist or climatologist to visit the class.

HANDOUT 1

Total Tonnage of Fish Caught in Peru and Chile (1952-1985)

Year	Peru	Chile
1952	106	119
53	148	107
54	176	143
55	213	214
56	279	188
57	483	213
58	930	226
59	2,152	275
60	3,531	339
61	5,243	430
62	7,163	638
63	7,090	762
64	9,321	1,161
65	7,631	708
66	8,844	1,383
67	10,198	1,053
68	10,555	1,371
69	9,243	1,077
1970	12,535	1,181
71	10,528	1,481
72	4,725	795
73	2,328	668
74	4,145	1,128
75	3,447	899
76	4,344	1.378
77	2,534	1,319
78	3,472	1,929
79	3,681	2,632
1980	2,731	2,616
81	2,750	3,393
82	3,437	3,846
83	1,450	4,168
84	3,339	4,499
85	4,168	4,804

HANDOUT 2

Southern Oscillation Values (1900-1987)

Year	Value	Year	Value	Year	Value
1900	-2.30 El Niño	1929	1.10 Anti-Niño	1959	-0.45
1901	0.30	1930	0.15	1960	0.25
1902	0.01	1931	-1.00	1961	-0.85
1903	-0.05	1932	-0.50	1962	0.05
1904	1.25 Anti-Niño	1933	-0.05	1963	-0.05
1905	-1.00	1934	-0.20	1964	0.30
1906	-0.80	1935	0.20	1965	-0.45 El Niño
1907	0	1936	-0.15	1966	-1.00
1908	0.50	1937	-0.10	1967	1.15 El Niño
1909	-0.20	1938	-0.05	1968	0.30
1910	1.65	1939	0.85	1969	-0.55
1911	0.30 El Niño	1940	-1.05 El Niño	1970	-0.80
1912	-1.60	1941	-1.45 El Niño	1971	1.80
1913	-0.25	1942	-0.55	1972	0.30 El Niño
1914	0.70	1943	0.95	1973	-1.40 El Niño
1915	-1.20	1944	0.50	1974	1.85
1916	-0.55	1945	1.10	1975	0.70
1917	1.65 Anti-Niño	1946	0.05	1976	1.30
1918	0.85	1947	0.20	1977	-0.10
1919	-1.55	1948	-0.60	1978	-2.00 El Niño
1920	-0.60	1949	0.20	1979	0.25
1921	0.75	1950	1.80 Anti-Niño	1980	-0.30
1922	0.65	1951	-0.20	1981	-0.90
1923	0.50	1952	-0.65	1982	0.45
1924	0	1953	-0.95 El Niño	1983	-3.25 El Niño
1925	1.45	1954	-0.55	1984	0.50
1926	-3.00 El Niño	1955	0.85	1985	1.35
1927	0.65	1956	1.15	1986	0
1928	1.10	1957	-0.40 El Niño	1987	-1.10 El Niño
		1958	-0.55 El Niño	1988	3.50 Anti-Niño

HANDOUT 3

Annual Sea Surface Temperatures at Puerto Chicama, Peru (1925-1988)

Year	Degrees C	Year	Degrees C	Year	Degrees C
1925	19.7	1946	16.6	1967	16.3
1926	18.4	1947	16.7	1968	16.2
1927	18.0	1948	17.9	1969	17.9
1928	17.8	1949	17.4	1970	15.7
1929	18.4	1950	15.5	1971	15.9
1930	19.0	1951	17.8	1972	18.8
1931	16.8	1952	16.6	1973	16.4
1932	17.3	1953	18.0	1974	16.1
1933	15.8	1954	15.8	1975	15.8
1934	16.0	1955	16.2	1976	18.0
1935	15.8	1956	16.7	1977	16.9
1936	16.3	1957	19.0	1978	16.3
1937	16.3	1958	18.1	1979	17.0
1938	15.4	1959	17.4	1980	16.9
1939	17.4	1960	16.6	1981	16.2
1940	18.1	1961	16.8	1982	17.9
1941	18.9	1962	16.4	1983	21.6
1942	16.9	1963	17.1	1984	15.9
1943	17.9	1964	16.2	1985	15.7
1944	17.3	1965	18.7	1986	17.6
1945	17.0	1966	16.8	1987	18.4
				1988	15.9

HANDOUT 4

Annual Rainfall in Piura, Peru (1955-1984)

Year	Millimeters
1955	10.0
1956	39.0
1957	40.0
1958	54.0
1959	32.0
1960	8.0
1961	10.7
1962	5.8
1963	4.0
1964	12.0
1965	85.0
1966	5.0
1967	69.0
1968	9.0
1969	6.5
1970	13.0
1971	69.0
1972	156.0
1973	101.5
1974	12.0
1975	36.2
1976	53.0
1977	54.1
1978	33.0
1979	5.0
1980	74.0
1981	38.0
1982	21.0
1983	347.0
1984	2154.4
1985	50.0

HANDOUT 5

El Niño, 1982-83
*Maximum Daily Runoff of Rivers in Northern Peru, December 1982 - May 1983, and Thirty-Year Means**

River	Dec.	Jan.	Feb.	Mar.	Apr.	May
Chira						
Max. daily runoff	288.2	1197.2	1641.9	2282.0	2437.1	2375.4
30-year mean	36.6	86.6	220.4	309.3	323.5	134.8
Piura						
Max. daily runoff	320.0	1314.6	1418.0	2428.4	2064.0	2473.0
30-year mean	0.5	3.6	59.8	108.2	89.7	29.9
Leche						
Max. daily runoff	18.9	77.2	46.2	122.5	120.9	108.1
30-year mean	3.1	5.3	9.8	17.5	14.5	7.5
Chancay-Reque						
Max. daily runoff	135.3	138.5	60.1	720.0	477.5	73.7
30-year mean	18.0	25.1	44.4	67.8	70.5	39.0
Zaña						
Max. daily runoff	11.7	146.2	23.0	177.5	160.0	84.3
30-year mean	3.7	5.4	10.2	15.6	17.2	11.2
Jequetepeque						
Max. daily runoff	92.4	155.9	80.4	624.2	266.2	220.6
30-year mean	13.3	19.9	50.6	72.5	58.9	28.8
Chicama						
Max. daily runoff	66.2	112.3	81.8	900.0	600.0	400.2
30-year mean	8.9	33.4	66.6	101.7	78.2	29.7
Moche						
Max. daily runoff	90.0	120.00	24.0	240.0	280.3	28.8
30-year mean	3.9	9.8	17.0	34.2	29.9	10.2
Virú						
Max. daily runoff	14.4	80.00	9.0	70.3	120.0	10.0
30-year mean	1.3	4.3	10.1	14.8	10.0	4.0

Source: Unpublished records of runoff from Dirección Regional de Agricultura, Dirección de Aguas y Suelos, Piura, Chiclaylo, and Trujillo.

*Cubic meters per second

Tropical and Temperate Rainforests: A Comparison and Contrast

Richard Hansis
Washington State University
Vancouver, WA

Rainforests exist in both tropical and temperate regions. The largest rainforests lie within 10 degrees latitude of the equator although outliers of the rainforest reach farther north and south along the east coasts of South America and extend into Central America. The northern and eastern parts of the Antilles in the Caribbean also contain rainforests. Tropical dry forests are found north and south of the tropical rainforests and on the west side of Central America. Temperatures averaging 18 degrees C (64.4 degrees F) in the coolest month and at least four inches or more rainfall per month characterize the climate where tropical forests are found.

Temperate rainforests exist in very specific, small and narrow bands in cooler locations. In North America the area is a narrow strip along the Pacific Coast from Monterey Bay, California, north to Kodiak island in southwest Alaska. In South America, temperate rainforests range from about 38 degrees latitude near Concepción, Chile, south to the tip of the continent. The largest temperate rainforest in the world is in North America and is coincident with the distribution of Sitka spruce. West coast temperate rainforests also vary with altitude. As altitude increases, temperatures and growing seasons decrease and trees become smaller.

Tropical rainforests consist of two major types, seasonally flooded and upland. Upland rainforests are on soils that are low in fertility, acidic and high in aluminum content. Seasonally flooded forests receive a new shot of natural fertilizer every flood season.

Tropical and maritime west coast temperate rainforests both have high amounts of biomass stored as vegetation, so nutrients are scarce in the soil. The maritime Pacific forest has the most biomass in the world, nearly three times as much biomass as the tropical rainforest. Much of this is organic matter on the forest floor -- leaves, fallen trees and branches -- a nutrient store for the regeneration of the forest and a sponge for water.

The lower temperatures of the temperate rainforests cause slower rates of decay than in the tropical rainforests. In the tropics leaves begin decomposing in a day and may be completely crumbled into their constituent elements in six days. The same process may take six months in temperate rainforests. Except for eroded, rocky and higher areas, temperate rainforest soils are higher in nutrients because of the slower rates of decomposition.

The Diversity and Complexity of the Rainforest

Diversity is the hallmark of both tropical and temperate rainforests. Complex relationships create multi-layered webs among plants, fungi, animals, insects and slime molds. Temperate rainforests have fewer species of trees than tropical rainforests because they are found in cooler climates, but their bio-diversity is still very complex. In the temperate rainforest of the Pacific Northwest interrelationships have developed among the northern spotted owl, its predators, trees, lichens, fungal mycorrhizae, red-backed voles and flying squirrels. The northern spotted owl as well as the pileated woodpecker, the marten and the marbled murrelet are used as indicator species; that is, as signs of the state of the forests. If their numbers decrease, it is seen as a sign that old growth forest ecosystems are declining.

While it is not necessarily true that the preservation of indicator species will lead to the preservation of the entire ecosystem, each species plays small roles in the entire system. The vole and squirrel, for example, spread spores of fungi which help make nutrients available to trees. The spotted owl feeds on rodents and red tree voles that, in turn, feed only on the needles of mature Douglas fir. The fecal pellets of the flying squirrel inoculate the soil with nitrogen fixing bacteria and yeast. Destruction of habitat for the spotted owl leads through a cascading set of interactions to difficulties in regeneration of the biological complexity found in mature and old growth temperate rainforests west of the Cascade Mountains in Oregon and Washington.

Although pushed into island-like remnants (*refugia*), the tropical rainforests of the Americas began as large source areas where multiple nets of plant and animal interaction developed and were propagated. Tropical rainforests have 50 to 200 tree species per acre instead of only the three to seven tree species per acre as in the temperate rainforests. It is rare to find more than two or three of the same species per acre. As many as 30 million to 80 million species of insects may inhabit tropical rainforests and only a small portion of them have been identified.

As numbers of species increase, their specialization increases. For example, the Brazil nut tree, a part of the rainforest canopy at over 100 to 250 feet tall, will survive and produce nuts only in the dense forest. Removal of surrounding vegetation causes the tree to dry out and eventually die. Pollination of its flowers will cease because the bees that perform this task can live only in the rainforest where orchids, its other source of pollen, live. Tropical rainforests are hard to regenerate after cutting. Seemingly insignificant creatures such as slime molds and fungi are necessary for forest regeneration. When large tracts of forest are removed, the slime molds are killed by the direct tropical sun. High rainfall washes soil nutrients away and seedlings do not grow because the slime molds are not present. Small openings in the forest, on the other hand, do not destroy regeneration capabilities because the adjacent forest serves as a reservoir for seeds, insects, birds, bats and slime molds. These organisms interact in complex and sometimes unknown (but not unknowable) ways.

The Value of Rainforests

Both types of rainforest have value for human beings. Some people believe that they have value in their own right; that is, apart from human evaluation. Henry David Thoreau and John Muir, two famous naturalists and nature writers, provided the justification for this view of nature. The more common, although not necessarily better, view of nature places an economic value on these forests because they supply human needs and wants: they become a natural resource and thus have a market price.

The temperate rainforests of North and South America are among the leading producers of wood in the world. The giant Douglas fir, western hemlock, western red cedar and Sitka spruce west of the Cascades and the Coast redwood of northern California and southern Oregon have provided high quality lumber for construction. Southern Chile provides increasing amounts of wood products, including wood pulp, lumber, newsprint and logs, exceeding the value of the country's agricultural exports.

Less clearly valued by the market price criterion but highly valued nonetheless are the medicines derived from plants. One in four medicines comes from plants in the tropical and temperate rainforests. Taxol produced from the bark of the Pacific yew, for example, is effective in the treatment of cancer. Both temperate and tropical plants may provide additional cures when tested for medicinal properties.

Just as rainforests are sources for medicines, they also provide food and other useful materials. In the temperate rainforests, mushroom and plant gathering provide income for some people. Tropical rainforests provide foods such as Brazil nut. A study done in eastern Peru has shown that the market price of products gathered from an acre of tropical rainforest exceeds $6,000 and is substantially higher than what could be produced from cutting the trees for wood or clearing the forest for cattle pasture.

The gene pool of the rainforest is a vast resource that needs protection. The biomass found in rainforests stores large amounts of carbon, preventing it from becoming atmospheric carbon dioxide (CO_2). Research has shown that the old growth temperate rainforests of the Pacific Northwest retain more carbon than other forests. Burning of American tropical rainforests contributes over 20 percent of the carbon released into the atmosphere.

One of the important values for forests is for recreation. The increasing recreational uses of forests range from fishing and hunting to the simple enjoyment of wilderness.

Another of the multiple uses of forests is as watersheds. Collection and slow release of water maintains stream flow and ground water at even levels. Forests promote slow nutrient release, less erosion, decreased sedimentation and less flooding. This improves stream life and influences ocean productivity.

Both tropical and temperate rainforests are cut for several reasons, but less than one percent of the tropical rainforest is harvested in a sustainable fashion. Once covering 12 percent of the earth's surface, tropical rainforests have been reduced to about 5 percent. Costa Rica's rainforests are being lost at 7 percent per year. In the Amazon Basin, the world's largest expanse of tropical rainforest, the destruction is estimated to have been 1.5 million hectares (3.7 million acres) from 1981 to 1985.

Driving the destruction of the tropical rainforests are three related phenomena: debt, poverty and population growth. Debt owed by governments, public bodies and private firms to international banks, multilateral lending institutions and wealthy industrialized countries requires interest payments that can be met by exports of forest products. The $115 billion and growing debt of Brazil requires interest payments of approximately $11 billion annually, and rapid exploitation of raw materials such as tropical wood is one source of foreign exchange to pay the debt.

Similarly, debt may drive the rapid depletion of temperate Pacific rainforests. Debt incurred in acquisition of timber owning companies can be paid by rapid clear cutting. A recent example is the cutting of redwoods in northern California.

Preventing deforestation requires action on several fronts. Sustainable forestry and agriculture can be practiced if political, economic and social changes take place. One of the keys to practicing sustainable development is to introduce other income opportunities which are at least as lucrative as the destructive activities. The development of extractive reserves is one way to protect rainforests and provide income. Rubber tappers and Brazil nut gatherers make a living in this way. Protection of indigenous people's access to the fo
way to maintain the complex tropica
ecosystem. Ecotourism, which is bas
beauty of the tropical rainforest, is b
increasingly important source of inc
areas of the tropics, especially when
made to use local food, lodging and
Agroforestry research reveals that alt
of crops and rainforest may provide
and some protection. Imitating the sh
agriculture of tropical rainforests or
strips of trees for lumber and charco
regeneration of the surrounding fores

Economic dependence on wood re
problems in the temperate rainforest
Approximately 90 percent of the old
of the Pacific Northwest have been re
pressures for preservation of differen
including old growth, have increase
forests must be decreased to ensure s
Unless alternative work, job training
processing of lumber occurs in these
economic dislocation is inevitable.

The Future of the Rainfores

New Forestry requires new approa
rainforest use and calls for integratio
knowledge and logging practices. It
complexity of ecosystems, the impor
noncommercial plant and animal spe
perpetuation of forests and the interd
forests and watersheds. Rainforests a
functional landscapes in which the cu
impacts of such practices as disperse
clear-cuts are recognized as detrimen

New Forestry calls for leaving som
and snags behind after harvest, leavin
downed wood on the ground, schedu
a regional scale and not dividing stan
growth forests. Similar principles are
to the study of sustainable tropical ra
including the implementation of bior
knowledge developed by science and
gained by indigenous peoples is exch
methods of using and preserving all
will be developed.

Humans, Owls, and Trees: A Learning Activity to Accompany *Tropical and Temperate Rainforests*

Tom Beaman and Teresa Osborne
Reynolds High School
Troutdale, OR

Introduction:

This two to three day learning activity examines the impact of millions of individual decisions on the Earth's environment using the depletion of forests as the prime study. It includes a variety of handouts and teacher material for flexibility of presentations.

Grade Level: High School (9-12)

Time Required: Two to three class periods, depending on presentations used and homework assigned.

Themes/Key Ideas:

Location of places can be described using formal reference systems.

Places can be described in different ways:

A. Places can be represented by data and narrative.

B. Places can be represented graphically.

C. People's descriptions of places reflect their values, attitudes, and perceptions.

Relationships within Place:

A. Relationships within places include how people interact with the environment.

1. People interact with the environment to obtain a variety of resources that meet their needs and wants.
2. Distribution of resources varies from place to place.
3. People perceive the environment in different ways.

B. Relationships within places include how people adapt to, or modify, the environment.

1. People's adaptations to, or modifications of, the environment are influenced by the characteristics of the environment in which they live.
2. People perceive environmental modification in different ways.

C. Relationships within places include changes in the environment.

D. Environmental change may influence regional/global systems.

Concepts:

Absolute and relative location; degradation; environmental determinism; frontier; agriculture; environmental perception; ecosystem; food chain; resource; conservation; sustainable earth; frontier; migration; settlement

Objectives: Students should be able to:

Knowledge:

A. Identify the impact on environment over time due to the collective nature of mass consumption.

Skills:

A. Present geographic information by preparing maps.

B. Analyze geographic information by interpreting maps.

Attitudes/Values:

A. Identify the value of thrift in resource utilization.

B. Explain how attitudes toward resources change as resources become scarce.

C. Value virgin forests as a vanishing resource.

D. Understand the impact of consumer attitudes on the environment.

Materials:

Class sets of handout readings and questions; colored pens or pencils for map preparation; outline map of the United States; transparency of Consumer Attitudes Survey; and overhead projector.

The Learning Activity

Background:

The selection of the Northern Spotted Owl as an endangered species has brought the problem of over-consumption of wood products to a head. The resulting need to set aside large areas of old growth forest threatens to cause major economic upheaval in the Pacific Northwest and has international ramifications.

Procedure:

A. Administer the Consumer Preferences Survey (Handout 1). Collect the responses.

B. Distribute outline maps of the United States and the chart titled "Millions of Acres of Land Cleared for Farming" (Handout 2). Direct students to classify the data in the "Total" column of the chart. Then have students prepare choropleth (area-value) maps using the data they have organized.

C. As students complete work on the map, have them tabulate the results of the survey on a transparency.

D. In the next period, collect the maps and handouts. Display the transparency. Distribute copies of "Humans, Owls, and Trees" (Handout 3). Develop questions related to this handout. Correct or collect and discuss as needed.

Additional Activities:

Divide the class into small groups to develop maps and graphs based on the detailed data in the chart or on data gathered through research. Encourage discussion of the human use of forests in the United States and elsewhere.

Evaluative Methods:

Evaluation may be formal or informal, verbal or written. Formal evaluation can take place with the various handouts, questions and maps.

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HANDOUT 1

SURVEY OF CONSUMER PREFERENCES

1. What type of construction best describes the house or apartment in which you live?
_____ Brick with wood framing
_____ Cement or stucco with wood framing
_____ Wood siding with wood framing
_____ Other

2. When you buy paper (notebook or typing paper, for example), which of the following is the most important factor in your decision?
_____ Best price for number of sheets
_____ What it is packaged in
_____ What the paper is made of
_____ I don't care; I grab a package and buy it

3. A) Does your family get a daily or Sunday newspaper?
_____ Yes, we get one or both
_____ No, we usually don't get a paper

B) If you answered yes to part A, answer the following question. If you answered no, go on to question #4.

After your family has read the paper, do you usually:
_____ Throw most of it away in the garbage.
_____ Burn most of it
_____ Recycle most of it
_____ Reuse most of it (share it with another family, line pet cages, use it for painting or wrapping gifts, etc.)

4. When you buy a greeting card, which of the following is most important in making your decision?
_____ Brand name
_____ Price
_____ Humor
_____ Appropriate sentiment for the occasion
_____ What the card is made of

5. Does your family own or use any of the following? (Check all that apply)
_____ Chain link fence
_____ Wood deck
_____ Wood patio furniture
_____ Paper plates
_____ Cement deck
_____ Plastic or metal patio furniture
_____ Paper napkins or towels
_____ Wood flower boxes
_____ Plastic flower boxes
_____ Wood fence
_____ Paper cups
_____ Disposable diapers

6. When you buy a product, what do you usually do with the packaging material?
_____ Throw it away
_____ Burn most of it
_____ Recycle most of it
_____ Reuse most of it

7. Do you eat beef (e.g. hamburger or steak)? _____ Yes _____ No

8. If you knew that this country might one day run out of a resource, what would you do? (Choose one)
_____ Not change my habits because it won't make any difference
_____ Not change my habits because we can always get it from another country
_____ Change my habits
_____ Change my habits and encourage others to change also

HANDOUT 2

Millions of Acres of Land Cleared for Farming Up to 1909

	1607-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1607-1909 **TOTAL**
Alabama	4.4	1.9	.0	1.2	1.3	.9	1.0	10.7
Arkansas	.8	1.2	.1	1.8	1.9	1.5	1.2	8.5
California	.1	.9	.9	1.6	.5	.2	.3	4.5
Connecticut	1.8	.1	.0	.0	.0	.0	.0	1.9
Florida	.3	.3	.1	.3	.3	.4	.4	2.1
Georgia	6.3	2.1	.5	1.7	1.6	1.2	1.8	15.2
Illinois	5.0	2.4	1.6	2.0	.3	.9	.3	12.5
Indiana	5.0	3.1	1.9	3.6	1.3	1.7	.4	17.0
Iowa	.8	.0	.0	.0	.0	.0	.0	.8
Kentucky	6.0	1.7	.9	2.7	1.4	2.0	.8	15.5
Louisiana	4.6	1.0	.0	.7	1.0	1.1	.6	9.0
Maine	2.0	.7	.2	.6	.0	.3	.2	4.0
Maryland	.6	.3	.1	.4	.0	.0	.0	1.4
Massachusetts	2.1	.1	.0	.4	.0	.0	.0	2.6
Michigan	1.9	1.5	1.6	3.2	1.6	1.9	1.1	12.8
Minnesota	.0	.3	.5	1.2	.6	1.1	.6	4.3
Mississippi	4.4	1.6	.0	1.2	1.7	.9	1.5	11.3
Missouri	2.9	1.3	.8	2.6	1.6	1.6	1.2	12.0
New Hampshire	2.6	.3	.0	.0	.0	.0	.0	2.9
New Jersey	1.8	.2	.1	.2	.0	.0	.0	2.3
New York	12.4	2.1	1.4	2.1	.0	.3	.0	18.3
North Carolina	5.5	1.2	.1	1.4	1.4	1.1	.6	11.3
Ohio	9.8	2.8	1.9	3.6	.8	1.3	.4	20.6
Oklahoma	.0	.0	.0	.0	.0	4.2	4.4	8.6
Oregon	.1	.8	.2	.8	.4	.4	.2	2.9
Pennsylvania	8.6	1.9	1.2	1.9	.2	.2	.0	14.0
Rhode Island	.3	.0	.0	.0	.0	.0	.0	.3
South Carolina	4.0	.8	.2	1.4	1.2	.9	.4	8.9
Tennessee	5.2	1.7	.5	1.7	.9	1.0	.7	6.5
Texas	.6	1.7	.5	5.2	5.5	2.1	2.2	17.8
Vermont	2.2	.1	.2	.2	.0	.0	.0	2.7
Virginia	10.3	1.6	.3	1.0	.9	1.1	.3	15.5
Washington	.0	.0	.0	.1	.2	.4	.5	1.2
West Virginia	1.8	.6	.4	1.3	.8	.9	.2	6.0
Wisconsin	.0	3.3	2.0	3.0	.9	1.4	.8	11.4

Source: Michael Williams, *Americans and Their Forests: A Historical Geography* (1989).

HANDOUT 3

Humans, Owls, and Trees

The maps you've made have shown you a lot about the forests in the United States. Similar reductions are taking place in forests around the world. For instance, the Amazon rainforest, which provides about 40 percent of the world's oxygen, is being reduced in size every year. Eighty percent of this deforestation has taken place since 1980. Worldwide, 27 million acres of tropical rainforests are cleared each year. That is an area equal to the state of Ohio. That also means that every day, 74,000 acres are cleared. Using simple math, you can see that is about 50 acres per minute (an acre is about the size of a football field).

Tropical rainforests are very important. In addition to providing oxygen, they are rich in plant and animal life, 99 percent of which we haven't yet studied. Some scientists believe that a cure for cancer may be found there if we don't destroy it first. Tropical rainforests cover around 5 percent of the Earth's surface, but contain over half of the Earth's plant and animal species. As many as 1,400 of these plants may contain a cure for cancer; so far, about 70 percent of the plants that show promise in cancer research come from these forests. What other cures might be destroyed soon?

So what does this all have to do with you? Your decisions and your actions help to determine what happens to the forests. You may be only one person, but in the U.S. there are about 250 million people, and each person makes decisions and takes actions. Together, even the smallest decisions add up to a huge impact.

The survey you took earlier will help to illustrate this point. As you continue to read, refer to the summary of this survey. You will see that most of the decisions you made, your classmates also made. If you multiply that by 250 million, or the world's population of over five billion, you can see how much of an impact each decision can have.

When you took the survey, it might have been the first time you ever thought about what your house is made of. In the United States, most of the housing units use lumber for the framing; since there are millions of homes, this represents millions and millions of trees.

Survey questions 2, 3 and 4 ask about your paper-buying actions. Have you ever thought about what goes into making your notebook paper, daily newspaper, or even your greeting cards? It is an important question. In the United States, we use 850 million trees each year just for newspapers! The Sunday paper uses 500,000 trees every week! The average American uses more than one tree each year to read the paper. How many of your classmates get a newspaper? How many of your classmates said that "what the paper is made of" was most important in question 2? How about the cards in question 4? It used to be that most paper came from rags, or recycled paper. In the 1860s, wood fiber began to be used; by 1904, most paper came from trees. Now, the average American uses seven trees per year. That totals over 1.5 billion trees for our country each year. As our population grows, and other countries use more paper, will we run out of trees?

Survey questions 5 and 6 also illustrate the impact that humans have on the forests. Did you know that each year, over a billion trees are used to make disposable diapers? Scientists are worried about a phenomenon called the Greenhouse Effect, which is caused by a buildup of carbon dioxide in the atmosphere. An average mature tree removes 13 pounds of carbon dioxide from the atmosphere each year. If a billion trees are used for diapers, that's 13 billion pounds of carbon dioxide that won't be removed from the atmosphere.

In the Amazon Basin thousands of acres of rainforest are being destroyed. Much of this occurs because it is so profitable to use the land to raise cattle. The beef is then sent to the consumers, including people in the United States. There are not enough cattle slaughtered in this country to satisfy the demand, so other countries sell beef to us. Each week, one fast food chain uses 16,000 head of cattle to make hamburgers. The purchase of this much beef raises the price of beef and encourages the people of Brazil to clear their forests (as we did in the 1800s) so they can sell us what we want.

As you can see, each decision that you make is important to the environment, the economy and foreign relations. It may seem insignificant, but each small decision can be multiplied hundreds of millions of times in an economy as big as ours. The future is being shaped by the sum of the decisions we make; each of our actions has a collective impact.

The Fight Over a Bird

In the forests that cover Oregon, Washington, and Northern California, the Northern Spotted Owl has become a symbol for both environmentalists and loggers. The environmentalists praise the owl as the bird that may save what many people see as the last great forest in the United States. People who log the forests, joined by those people who work in the mills and factories that make wood products, see the owl as an enemy: a bird that forces them out of work. A common sight in the logging communities of the Northwest is the bumper sticker that reads: "I love Spotted Owls--fried!"

The bird that has been debated in Congress is called an indicator species. An indicator species is one that indicates the general health of an ecosystem: in this case, the old growth forest. The spotted owl needs the dense cover of old growth timber to hide from its predators and hunt its prey in safety. Each owl pair needs between 1,200 and 3,000 acres of old growth to nest, feed, and reproduce. As the old growth forests are cut, the birds either die or are forced to live in smaller and smaller areas. If this continues, the bird may eventually become extinct. The food chain, the delicate balance of the numbers of predators and prey in the forests, would be upset.

The final impact on the food chain is not yet understood. Without the spotted owl, would there be an increase in the population of their prey of mice and small mammals? Would those that hunt the owl, such as the great horned owl, also become extinct? Deer and elk, which also survive in the old growth ecosystem, suffer when the forests are cut. Even if new trees are planted, these larger so-called "big game" species also need the food and protection provided by an old growth forest. Once a species becomes extinct, no one can bring it back, and biologists don't know how many species can go extinct before the food chain breaks apart.

The spotted owl, as an indicator species, has been used by environmentalists to force a reduction in the amount of old growth forests that are cut. The trees that were seedlings when Columbus sailed the Atlantic continue to be cut, just not as fast. For instance, in the number one timber producing national forest in the United States, the Willamette National Forest, 13,000 acres were cleared each year from 1985 to 1990. This will be reduced from 1990 until the year 2000 to about 9,100 acres annually. Overall during the 1980s, the amount of national forest land cleared was about 700,000 acres. It is estimated by Peter Morrison of the Wilderness Society that only 12 percent of the original forests in Oregon and Washington remain.

Given these facts, the environmentalists sued the Forest Service, claiming that logging was threatening the survival of the spotted owl. The courts agreed, and the harvests in the future will be smaller in order to protect the bird. This will mean more unemployment in the United States as well as higher costs for wood products. The Forest Service has set aside 3 million acres of forest until at least 1992 when a recovery plan for the spotted owl should be ready.

Those families whose incomes are based on harvesting the forest, the loggers and mill workers, are worried and angry. Many others are worried also: since Oregon's #1 industry is wood products, all of the workers who supply them -- the retailers, restaurants, gas station owners, and others, will lose business. In 1990, there were large protests against the report that clearly identified the need to reduce forest harvesting to save the spotted owl. The Jack Ward Thomas report, named after the chairman of the panel of scientists, found that large areas of forest were needed to prevent the bird from becoming extinct. That conclusion would mean a huge drop in the amount of logging allowed, and therefore a huge drop in the supply of wood products. Some areas of Oregon could face as much as 73 percent decrease in the land available to harvest. Thousands of jobs could be lost.

Meanwhile, many politicians believe that those jobs could easily be replaced. Currently, raw logs are shipped overseas to be processed into various wood products. If those logs were kept in the United States, there would be more U.S. jobs in sawmills and other wood finishing industries. This would affect our trade relations with many countries, especially Japan, who would lose the jobs gained by the United States. Japan buys 38 percent of its wood from North America, almost solely from the Pacific Northwest. It could also drive up the cost of wood products even more since workers in the United States are usually paid more than workers in other countries.

Why worry? Because at the rate of harvest in the late 1980s, some believe that the United States could run out of harvestable forest in your lifetime. But that depends on the decisions you make as a consumer of paper, furniture, houses, and all the other wood products available to us.

Deforestation On Trial: A Learning Activity to Accompany *Tropical and Temperate Rainforests*

Kay Sandmeier
National Geographic Society
Washington, DC

Introduction:

This activity will demonstrate how viewpoints of many people are intertwined in a problem common to them all, the destruction of the rainforest. The activity is a mock trial with the parties to the suit being the Deforestation Advocates (defendant) and the Environmental Concerns (plaintiff).

Suggested Grade Level:

This role-playing activity is intended for middle school, grades 6 through 9. High school students could also use the format, if they research and develop their own "roles" and prepare their scripts for the trial.

Time:

As a classroom activity this lesson requires 2 to 3 days. One class period would be adequate if the trial is used as an introductory lesson to a unit on South America.

Themes: Human-Environment Interaction.

Materials Required:

Map, atlas, resource materials, reference books, slides or VCR tapes, and art supplies for poster or mural projects.

Objectives: Students will:

A. Gain an appreciation of how many points of view exist about one topic.

B. Have an opportunity to participate in a trial through a role-playing simulation.

C. Be able to describe groups that have an interest in the future of the tropical rain forests and will be able to analyze each group's use of the land.

Suggested Procedure:

Assign roles to students (see handouts). Give them time to prepare their roles by thinking about their oral responses regarding deforestation. With the teacher acting as the judge, open the trial of the rainforest. Have the jury take seats at the front or side of the room. Let the plaintiff and defense attorneys make their opening remarks. Have the attorneys call their witnesses to testify. Cross examination can be conducted if there is sufficient time. About ten minutes before the end of the class, recess the jury. While the jury is outside the room, have the class vote on which side they think will win. Have the jury reconvene and have the jury foreman announce the decision. Conclude the activity with a class discussion about the outcome of the trial and how the various witnesses arrived at their opinions or stand on the issue.

Evaluation:

Students could write an overnight reaction paper or construct a chart summarizing the points made by each witness. The two opposing sides, the jury, and the witnesses might form groups and write a summary from their perspective of the activity. Have students create a Venn diagram to illustrate the conflict.

Extension Activities:

For high school students, a trip to an actual courtroom could be made to familiarize students with the roles in the court.

Use slides or videotape clips during the trial to present information and create more interest. Have students prepare graphs, charts, or other visual aids. It might be fun to have the witnesses dress to represent their roles.

Junior high or middle school students could construct posters showing the person they represent. Groups might cooperate in creating a mural showing all the various viewpoints of the deforestation problem.

Materials Provided:

Handout 1 – Suggestions for Roles

Handout 2 – Points to Consider

HANDOUT 1

Suggestions for Roles in the Trial Simulations

Judge – Teacher

Six jury members

Plaintiff Attorney – Opening statement might be: "Your Honor, I intend to show that the actions of many are creating an international situation that is intolerable, and I will attempt to prove beyond any doubt that the deforestation occurring in the Amazon Basin of Brazil must be controlled or stopped if we want to protect our environment and the quality of life we have known as the inhabitants of this country. I will call many noted authorities from the scientific and environmental community and their testimony will support the claim that my clients make, that further destruction of the forest will alter and damage forever the environment."

Defense Attorney – Opening statement might be: "Your Honor, I am representing the numerous defendants in this case, and I will defend the rights of my clients to continue their actions in the rainforest of Brazil. While the plaintiffs' attorney will attempt to sway the jury with sentimental, environmental 'do-gooders,' I will show cause with hard facts, economic indicators, pertinent data, and opinions from the business community why my clients have the legal precedent to continue their varied operations in the rainforest."

The following witnesses are summoned to testify for the Plaintiff Attorney:

A rubber tapper – his wages are paid by a foreign investor. Age 30, 6 children.

A Brazil nut factory worker – he receives minimal wages. Age 9.

A tourist – has cash to spend, loves adventure travel and exotic locations.

A biologist – concerned about the fragile ecosystem says that half of the plant and animal species of the world live in the rainforest.

A medical researcher – comments that plants found in the rainforest are used in the treatment of malaria, leukemia, and high blood pressure. Only 1 percent of the plants have been studied for medicinal purposes.

A *favela* dweller – lives in a squalid city slum and is anxious to find work that will help the quality of the family's life. They would be willing to relocate.

A Yanomani native – gets fresh fish, herbs, fruit, and medicine, building supplies from the forest. Members of the tribe have died from disease brought in by new settlers and the survivors fear loss of their ancient homesite as well as the rapid infusion of modern ways of life.

A national park advocate – believes that the creation of a large park would create a "living" museum and field laboratory, and that the large park could be controlled so that the environmental impact would be minimal.

A professional photographer – visits the region frequently on assignment to photograph the flora and fauna.

An anthropologist – strongly believes that the region needs field exploration and that the people of the region must be studied soon.

An ichthyologist – is conducting studies on the pink dolphin and piranha.

An environmentalist – has stated that rainforests cover scarcely 6 percent of the earth but are habitat to half the world's living things. Sadly, the rainforest is being destroyed faster than any other natural community.

A geographer – describes the rainforests as being located in a band around the world near the equator, explains how the rainforests are an important part of global systems, and argues that the most profitable ways of developing the rainforest involve preserving it.

A spice merchant – says valuable spices, such as pepper, ginger, cloves, cinnamon, nutmeg and allspice originate in the region.

Witnesses for the Defense Attorney include:

A government official – recommends that careful consideration be given and that the consequences of actions be weighed in a thoughtful manner. He asks, "What do the majority of citizens want?"

A lumber company manager – the company clear-cuts timber, making land available for cattle ranching operations.

A plantation owner – his land must be cleared before a crop can be planted. The land is not fertile after two or three years and therefore more land is necessary for the plantation to enjoy a profit.

A road construction foreman – access to the trees for lumber requires adequate roads. The company hires unskilled workers.

A dam builder – while a dam will flood 450 square miles of forest, the abundant, cheap energy produced will benefit the inhabitants of the region.

A banker – has money to loan to build roads through the forest and money to assist in opening up territory for development.

An economic advisor – sees that development can assist the repayment of a large foreign debt.

A professional hunter – is paid large amounts of cash for obtaining animals (dead or alive).

A subsistence farmer – does not own the land that he farms, but has lived on it for 10 years and sells, trades and barters products that he harvests.

A ranch foreman – hires unskilled, uneducated workers and provides room and board as well as minimum wages.

The Mayor of Manaus – sees exciting economic possibilities in further development of the region. He sees development of the region as crucial to bringing prosperity to the area.

HANDOUT 2

Trial Preparation Points to Consider

The students need to develop their roles from the perspective of the individual that they are representing. Brief generalizations have been provided for the various participants on Handout 1. Each student needs to consider the pros and cons of deforestation in order to present effective and compelling testimony during the trial.

Questions that may assist in developing the character roles are:

1. How does each person's use of the forest affect the whole country?
2. What are the financial benefits, national, local, individual?
3. Does the person being portrayed depend on the rainforest for their livelihood? How is the life style of the person affected? Will these changes be temporary or permanent?
4. Will natural resources be harmed or benefitted by deforestation? Consider water, soil, plants, animals, and minerals.
5. What role should environmental concerns play in the final decision? Are scientific, financial, or political interests more important?
6. Who has the more likely chance of success? Who should win? Why? How do you argue against that person in order to win?

II. World Economy

United States Regions and the Global Economy

Warf
Kent Sta rsity
, OH

The 1980s saw dramatic changes in the social and economic landscapes of the United States. Regions and cities that formerly enjoyed considerable prosperity, such as the industrial Midwest, suffered serious economic losses, while others, such as southern California, enjoyed tremendous periods of sustained growth. Many of these changes were due to the changing global economy and the changing position of the United States within it. The late twentieth century will be viewed by future geographers as a period of sweeping internationalization in which national markets became firmly tied together through trade, immigration, investment and flows of finance capital.

Internationalization is not a new phenomenon. From its inception, capitalism has always been a global system stretching beyond the borders of the nation-state, as early colonial empires illustrated. In the economic development of the United States, the global economy repeatedly provided foreign labor, such as slaves and immigrants, foreign markets, such as for Southern cotton, and foreign investment capital, such as British firms that financed much of the infrastructure of the United States in the nineteenth century. But the changes since World War II are unprecedented; the depth, magnitude, and rapidity with which international production, consumption and trade have grown in recent years is unparalleled.

The evolution of the world economy is largely responsible for these trends. Over the last 50 years, a gradual decline has occurred in the United States's competitive status internationally. In 1950, the United States produced 50 percent of the world's
goods and services; today, it accounts
25 percent, but is still by far the world'
national economy. The rising prowess
and Japan accounts for part of this tren
newly industrialized nations in East As
Multinational corporations, responsibl
the Industrial Revolution to the Third
established new productive facilities o
Easily crossed national boundaries thr
operations, set up sunrise industries ab
often coincide with sunset industries at

In the 1970s, the oil shocks that rais
of petroleum dramatically illustrated th
States's dependence on foreign oil and
generated billions of "petrodollars" tha
recycled to Third World nations, leadi
growing debt crisis. In the 1980s, a wa
deregulation, including the shift to flo
exchange rates and the relaxation of c
foreign ownership of stocks, spurred f
to invest abroad; banks and securities
simultaneously erected an expanding n
telecommunications systems, which a
to move vast quantities of funds instan
around the globe. Finally, enormous U
federal government budget and trade d
attracted sizable quantities of foreign (
Japanese) funds, much of which was n
wave of foreign investment in offices,
land, and new manufacturing plants.

Internationalization has had dramati
the internal geography of the United S
reproducing the unevenness of the pas
often unexpected ways. A comprehens
all of the dimensions of this process is

here. This essay, therefore, focuses on five regions: New York City; the Midwest; the South; California; and the Pacific Northwest, offering vignettes that capture the distinctiveness of globalization as it is manifested differently in each place.

New York City

Of all the metropolitan areas in North America, New York, the nation's largest, is perhaps the most firmly linked to the world economy. From its inception as a port city, New York has always been a global metropolis. The Port of New York is still one of the busiest in the nation; the region's airports are even more important, accounting for 75 percent of the United States's overseas air cargo trade. Today, the linkages between New York and the world economy are so strong that it may be more heavily tied to the global than the national economy.

Through its nerve center in Manhattan, New York has long been the nation's capital for financial transactions, symbolized by the massive network of banks and securities firms on Wall Street; banking is to New York what steel was to Buffalo or automobiles were to Detroit. Finance and service firms are drawn to Manhattan by the potential for face-to-face interaction, the large, skilled labor pool, and the enormous array of specialized services found there. In the 1980s the deregulation of the securities markets and new sources of investment capital such as pension and mutual funds contributed to the great "bull market" on the New York stock exchange. A wave of corporate takeovers, mergers, and leveraged buyouts created a boom in investment banking. New York is also the largest center of foreign banking in the United States, particularly for giant Japanese financial institutions. Today, 20 percent of the city's banking employment is in foreign-owned firms. As a result of these changes, New York's capital markets have become firmly linked to other "global cities" such as Tokyo and London, and the city is susceptible to global business fluctuations such as the October 19, 1987 stock market crash.

Associated with the growth of New York's financial firms has been an expansion of business services, including legal firms, advertising, accounting, public relations, engineering and architecture, and consulting. Many of these firms are also tied to the global marketplace. New York law firms, for example, may assist in corporate takeovers in Western Europe or advise foreign clients investing in the United States. Seven of the nation's eight largest accounting firms are headquartered in New York and they have extensive overseas operations. Foreign advertising firms, particularly British, have also become a major presence in the city. Finally, foreign tourism to New York has risen dramatically, accounting for 20 percent of the 18 million annual visitors to the city, stimulating a demand for hotels and restaurants.

New York has the largest concentration of office space in the world. As it became progressively more internationalized, a wave of construction swept the city, creating innumerable new office towers, hotels, convention centers and trendy stores. Foreign firms, particularly from Canada and Japan, purchased many new offices and hotels, including Rockefeller Center. One-fifth of the city's commercial real estate is now foreign-owned. The surge in demand for office space and the high incomes of many who work in service firms led to an explosion in the city's commercial and residential rents.

New York has always been synonymous with immigration to the United States. Millions of poor migrants, taking refuge from the poverty and repression of nineteenth century Europe, formed much of the labor pool that fueled the Industrial Revolution in the United States. New York still retains pockets of many of its early immigrant communities, including Italians, Germans, Poles, Ukrainians and Jews, who, intertwined with the city's African-American and Puerto Rican population, lend it its distinctively diverse makeup. Although the sources of immigrants have changed recently, New York continues to attract people from around the world. Brooklyn boasts the largest Russian population outside of the former Soviet Union. Today, most newcomers arrive from the Third World, particularly Asia and Latin America. From Asia, Koreans set up small fruit and vegetable markets. An exodus from Hong Kong created a new Chinatown in Queens. There are also growing Vietnamese, Indian and Pakistani communities. From Latin America, the city's large population of Puerto Ricans and Cubans has been joined by many Dominicans and Colombians. New York is also home to more than 700,000 black non-Hispanic Caribbeans, who came from Haiti, Jamaica, Barbados, Grenada, Trinidad and other islands to make it the largest West Indian city in the world. Internationalization has thus retained, but changed, the city's distinctive ethnic heterogeneity. Immigrants are vital to the city's economy, often doing the tedious, low paying work spurned by native-born Americans.

The Midwest

The Midwest encompasses several distinct subregions, each largely defined by characteristic industries. The industrial Midwest, stretching along the southern edges of the Great Lakes, was long the heartland of the United States' heavy industry. Chicago, while part of this Manufacturing Belt, has also become a major service center. The agricultural Midwest encompasses both the dairy, corn and hog producing states, including southern Illinois, Iowa, Wisconsin, Minnesota and the wheat producing areas farther west, stretching from Kansas north to North Dakota. Like other parts of the nation, the insistent forces of globalization have reworked the geography of the nation's interior, producing a new economic landscape superimposed on top of the old.

For the industrial Midwest, the internationalization of the United States' economy has been disastrous. From the 1960s to the 1980s, areas such as Michigan, Ohio, Indiana, western Pennsylvania and parts of Illinois -- the core of the traditional Manufacturing Belt -- were besieged by rising foreign competition and cheap imports. As a result, a wave of deindustrialization, manifested in plant closures, layoffs, unemployment and mounting poverty, severely depressed the regional economy. Detroit, long famous as Motor City, witnessed a steady decline in its fortunes and population as the automobile industry became reorganized along a global scale and as imports gained market share. Major steel producing centers such as Buffalo, Pittsburgh, Youngstown and Cleveland suffered acutely from the restructuring of steel production, including the shift of jobs to Sunbelt states and a growing dependence on imported steel. As these industries declined, affiliated sectors such as rubber, glass, machine tools and parts manufacturers also saw reductions in their sales, leading to widespread layoffs and plant closures. In short, internationalization was not kind to the nation's industrial core. There is one ray of hope, however: foreign investment. Japanese automobile producers, for example, have invested heavily in southern Ohio, creating hopes for a future reindustrialization of the Midwest.

Chicago, the nation's third largest city and long a major center of meat packing, steel production, shipping and other industries, has also seen a rapid erosion of its manufacturing base. However, Chicago has also become a regional, national and international center of business and financial services, particularly in the commodities exchange. Trade in commodities, from pork bellies to a thousand types of wheat, is to Chicago what trade in securities is to New York. Increasingly, the commodities market has become globalized; the Chicago Mercantile Exchange recently installed a 24-hour-per-day trading system to facilitate trading around the world. Similarly, Pittsburgh has seen a renaissance centered around business services.

Two cities in the Midwest, Buffalo and Detroit, form the gateways through which flows the bulk of United States's imports from and exports to its largest trading partner, Canada. United States-Canadian trade will rise rapidly in the 1990s after the 1988 initiation of the Free Trade Agreement that eliminated the last trade and investment barriers between the two nations. As a result, the Buffalo area in particular has enjoyed a mild resurgence of growth, including large numbers of Canadian firms.

The Twin Cities of Minneapolis/St. Paul, the dominant service center of the northern Midwest, have also seen a heavy influx of foreign investment. One-third of their downtown area is owned by Canadians. Tourism from nearby Manitoba has also risen steadily. The Twin Cities are also home to the nation's largest Hmong community, originally from Laos, and many Vietnamese.

Unlike its industrial counterpart, the agricultural Midwest has largely benefitted from globalization, primarily because of the enormous size and productivity of the United States' food producing industry. In agriculture, there is only one superpower, and the United States is by far the world's leading exporter of wheat, corn, soybeans, rice and other crops, but it remains a net importer of meat. Farmers in states such as Kansas, Nebraska or South Dakota often are well aware that next year's revenues will be heavily affected by the demand for their crops in Europe, Japan or the Soviet Union. Thus, although the agricultural Midwest suffered a severe economic downturn in the 1980s due to high interest rates, foreign exports of crops helped to mitigate the effects of what would otherwise have been an even more painful period of readjustment.

The South

Long one of the poorer parts of the United States, the South saw a significant reversal in its fortunes in the 1980s. With cheap labor, low taxes and aggressive local policy incentives, the South became the nation's most rapidly growing area, attracting firms, people and investment and exhibiting rising overseas linkages. Atlanta, Georgia, serves as the region's financial center, with a significant concentration of banks and service firms. Long a regional transportation hub, Atlanta's linkages have expanded in the international arena. Hartsfield International Airport was the nation's most rapidly growing in the 1980s and became its second busiest after Chicago's O'Hare, with direct flights to Europe and Latin America. Foreign firms such as Japanese-owned YKK, the world's largest producer of zippers, expanded their presence to cities such as Macon. Similarly, Tennessee enjoyed enormous success in attracting Japanese manufacturing firms, including Komatsu (construction equipment), Nissan (trucks and automobiles), Firestone and Bridgestone (radial tires) and Toshiba (electronics), which created more than 7,000 jobs there.

Florida, the nation's fourth most populous state, is also firmly connected to the world economy. Each year, 20 million tourists, 50 percent of whom are foreigners, flock to the state. Southern Florida is also the nation's major gateway through which 70 percent of all heroin, cocaine, marijuana and other illegal drugs flow into the United States. These shipments, especially from Colombia, enter largely through small boats and airplanes that elude surveillance.

The Miami metropolitan area exhibits particularly strong ties to the international economy, especially to Latin America. Traditionally a retirement center for snowbirds from the Northeast, Miami in the 1970s and 1980s was transformed into a trade, immigration, finance and shopping center for the Caribbean and Central and South America. Almost 80 percent of exports through the port of Miami are destined for Latin America. One-half of the population of the Miami region, or 650,000 people, including the mayor, consists of immigrants from Cuba. Many of them fled their country after the Cuban Revolution of 1959, while others arrived during the Marielito boatlift of the early 1980s. Miami's immigrants include 300,000 Nicaraguans who arrived in large numbers after the Sandinista Revolution of 1979. The region also is home to a sizable Haitian population, most of whom sought to escape the suffocating poverty of their native land. Miami is a major shopping center for wealthy Latin Americans, who frequently buy condominiums there or stay at expensive hotels on weekend shopping trips.

Texas and Louisiana, and to a lesser extent Oklahoma (and in a separate case, Alaska), form the oil patch states, the primary centers of domestic petroleum production and refining. Although oil has been pumped in these states since the early twentieth century, it was during the infamous oil shocks of the 1970s, when the Organization of Petroleum Exporting Countries (OPEC) forced up the price of oil by more than 1000 percent, that their status as major foci of oil production was confirmed. As global oil prices climbed, the domestic industry and the oil patch states prospered even as other parts of the nation suffered a severe oil-induced recession. Houston, Texas, became known as the nation's oil capital and saw an explosive increase in jobs, population, tax revenues and real estate prices. In the 1980s, largely due to OPEC's disarray, the world price of oil plunged, depressing revenues for oil producing regions. Having ridden the wave of prosperity induced by the rise in oil prices in the 1970s, the oil patch states suffered acutely in the late 1980s, with high unemployment, falling real estate prices and a net loss of people. Clearly, internationalization has its costs as well as its benefits, and a region that is favored at one moment may not be so fortunate the next.

California

The western United States, encompassing a wide variety of places, has rivalled the South as the most rapidly growing region in the last two decades. The entire Sunbelt saw a migration of jobs and people from the Midwest and Northeast. Part of this growth was due to the West's extensive ties with the international economy. For example, the greatest increases in United States international trade have been with the surging East Asian nations, including Japan, South Korea, Taiwan, Hong Kong, Singapore and, increasingly, China, Thailand and Malaysia. More United States trade now crosses the Pacific Ocean than the Atlantic. As a result of this shift, West Coast ports, particularly Seattle and Los Angeles (the nation's largest), have enjoyed a boom in transshipments of imports and exports.

California, the nation's most populous state, larger even than Canada, has ridden the wave of internationalization to unparalleled levels of wealth.

Foreign investment in California greatly exceeds that in any other state in the United States. In particular, the Los Angeles metropolitan area, the nation's second largest, has emerged as one of the most dynamic centers on the face of the planet, a giant in terms of finance, industry and immigration. The growth of the Los Angeles area since World War II, largely due to defense spending, aerospace, automobiles, the entertainment industry and electronics has been amplified (and often replaced) by new functions. Like New York, Los Angeles has become a significant banking center, but unlike New York, it is primarily oriented to Pacific Rim capital circuits. Los Angeles banks invested heavily abroad during the 1970s and now suffer from the specter of Third World debt. The Los Angeles stock market has become a major intermediary between New York and Tokyo, firmly connected to East Asian nations by an expanding trans-Pacific telecommunications network. Foreign firms have invested heavily in the region. For example, more than half of the entire office space of downtown Los Angeles (which grew rapidly as the area internationalized) is foreign-owned, particularly by Japanese firms.

In terms of immigration, the Los Angeles region rivals New York in the number and diversity of its inhabitants from other nations. Today, roughly 10 percent of the entire population of Mexico -- eight million people -- lives in the United States, primarily in southern California and southern Texas. Almost two million people of Mexican ancestry, as well as 400,000 Salvadorans (including both legal documented and illegal undocumented residents), make the Los Angeles metropolis one of the largest Spanish-speaking cities in the world. In addition, the Los Angeles area has attracted numerous Asian immigrants, including hundreds of thousands of Chinese, Japanese, Koreans, Vietnamese, and Filipinos. Immigrants often perform the hard, dirty, dangerous and low-paying jobs. In southern California they wash dishes, wait tables, pick fruits and vegetables, and work as nurses, orderlies, day laborers, taxi drivers and in the exploitative sweatshops of the city's revitalized garment industry.

Northern California, which has lagged behind the rapid growth in the south, has also become increasingly internationalized. While its port has lost in comparison to Seattle and Los Angeles, San Francisco is still a major center for foreign and domestic multinational firms, particularly in the construction sector, including the Bechtel Corporation. Computer firms in Silicon Valley (Santa Clara County), one of the world's largest high technology centers, export to markets around the world. Similarly Napa Valley, one of the world's lushest wine-growing regions, has become world-famous for the quality and quantity of its products.

The Pacific Northwest

A distinct region in the American natural and social landscape, the Pacific Northwest states of Washington and Oregon have also seen growing linkages to the world economy that reflect their unique economies and historical experiences. Much of the early growth of the area was driven by the lumber industry, attracted by the region's lush forests. Today, the lumber industry, like so many others, has become firmly globalized. Northwest-based firms such as Weyerhauser sell lumber (mostly uncut logs) to clients around the world, particularly Japan, leaving small lumber towns susceptible to international changes in currency exchange rates and trade policy.

The economic capital of the Northwest, Seattle, is one of the most rapidly growing metropolitan areas in the United States. The Boeing Corporation, the world's largest producer of civilian aircraft, is headquartered here; as its sales to airlines around the world have grown, so too has the surrounding region. Seattle has diversified considerably from its heavy reliance upon Boeing in the 1970s, however. The city has become the regional banking center, with extensive ties to Alaska. A large concentration of computer software firms such as Microsoft has become internationally famous. The Port of Seattle, like that of Los Angeles, enjoyed a major boom as trade with East Asia flourished. As the city prospered it gained people, including a growing Chinese, Korean, Cambodian and Vietnamese community. Similarly, Portland, Oregon, has a rapidly growing port, especially in automobile imports, and foreign investment.

Conclusion

The 1980s witnessed a dramatic realignment in the United States' competitive position internationally, which in turn produced a new geography of growth and decline. For some places, such as Florida, New York or Los Angeles, growing connections to the world economy have meant more jobs, rising income and more expensive real estate. For other regions, particularly the industrial Midwest, the same process led to deindustrialization, rising unemployment and growing poverty. Thus internationalization has not ended uneven spatial development in the United States; rather, it has transformed earlier, existing patterns. One cannot simply label this process as a good or bad phenomenon. Internationalization is both, generating benefits and costs simultaneously and unevenly.

As the linkages between various regions and the global economy have grown, so too has controversy over what to do about it. Foreign investment in the United States has raised significant concern over the political control of foreign-owned factories, offices, financial assets and tax revenues. Continued immigration has led to fears of job displacement and calls for stricter quotas and their enforcement. Large trade deficits that result because the United States buys more from other nations than it sells to them have renewed protectionist cries. In short, the multiple ways in which local places are tied to distant corners of the planet have brought the world to our doorstep. For people concerned about their communities and their own futures within them, this process means that a knowledge of other nations -- their histories, languages, cultures, economies and politics -- is essential. In the years shortly after World War II, when the United States enjoyed the luxury of little international competition, such a knowledge was not absolutely essential. As each city and region becomes enmeshed in the rapidly evolving global order, however, an ignorance of the rest of the world can lead to disastrous consequences.

Prisms of Promise - Selected Regions of the United States: A Learning Activity to Accompany *United States Regions and the Global Economy*

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Introduction:

Because of the dramatic changes in the global economy over the last few decades, the regional economies of the United States have gone through significant restructuring. For some, the process has resulted in declines in population and outmigration; for others, it has meant growth and prosperity. In this activity, students will examine the changing economic and cultural patterns that are beginning to become apparent in the emerging redefinition of the regions of the United States. The process will include a variety of classroom exercises challenging students to use skills involving data assessment and critical thinking.

Grade Level: 9th through 12th grade

Time Required: 3 class periods of 50 minutes each

Theme: *Regions:* A region has common characteristics that may persist or change.

Concepts: Region, restructuring, interaction, adaptation

Objectives: As a result of participating in this activity, students will be able to attain the following objectives:

Knowledge:

A. Define the term region.

B. Apply the region theme to specific economic situations.

C. Describe the changes that have occurred in selected regional economies of the United States over the past several decades.

D. Explain the impact of the economic restructuring presently taking place in the United States.

E. Relate the alteration in the selected regional economies of the United States to the rapidly changing global economy.

Skills:

A. Assess data.

B. Structure speculative generalizations about selected economic regions.

C. Prepare generalizations from descriptive data presented in an interpretive essay.

D. Prepare a color coded map showing the changing economies of selected regions of the United States.

Attitudes and Values:

A. Recognize that changes in economic conditions (whether for good or ill) require emotional adjustments among those affected.

B. Realize that economic decisions have cultural consequences which themselves become agents of change.

Materials:

A. Barney Warf, "United States Regions and the Global Economy" (the background essay for this section)

B. United States Regions Comparison Chart (Handout 1)

C. Outline map of the United States

D. Set of colored pencils

Background:

It is essential to have a clear understanding of the five themes of geography: location, place, human/environment interaction, movement, and region. They serve as the curricular organizers for school geography in the United States and provide a background for presenting this activity in the classroom. The theme around which all the lessons cluster is region. This activity both clarifies and amplifies that concept.

The Learning Activity

DAY 1

1. Begin by reviewing the concept of region with students. Tell them that it is one of geography's five fundamental themes and the one that geographers use to simplify the complexity of the Earth's surface. Remind them that geographers divide the world into regions in order to show the similarities and differences among its various parts. It is a way to identify commonalities that distinguish one part of Earth from others. To help the class better understand the idea of region, suggest some examples such as the Corn Belt, the Pacific Northwest, the state of Texas, the Sahel, a local school district, Amazonia and the rainforest, a city's central business district (CBD), and so on. Challenge the class to develop a definition of its own for the term. Any reasonable definition is acceptable. This one might serve as a model against which to measure the ideas the class crafts through its deliberation:

> *A region is any large or small area that shares a single common characteristic or set of characteristics that differentiate it from neighboring areas.*

2. Now tell the class that the United States typically has been divided into regions that have been largely determined by their location and their physical features like topography, climate patterns, and vegetation. In addition, primary economic activity has also influenced regional identification, such as agriculture in the Great Plains, fishing and ship building in New England, and trade and manufacturing in the Middle Atlantic region.

With that as background, explain that regions tend to change and that they do so for a variety of reasons, but mostly because the ways people perceive and use them change. Remind students that when Columbus encountered the Western Hemisphere, dramatic changes in physical and cultural environments on both sides of the Atlantic resulted. At this point, class members might be able to suggest other incidents of regional changes such as the impact of war on an area, the ruptures caused by a natural disaster like a tornado or a flash flood, cultural changes brought about by the mass migrations of human beings, or the adaptations necessary due to the missionary activities of many of the world's religions.

3. With that as background assign, as homework or as an in-class reading, Barney Warf's essay *United States Regions and the Global Economy.* To provide a guide for study, write this focus question on the chalkboard or overhead projector: What is the key social and economic change that has occurred over the last several decades in each of the five regions Mr. Warf discusses? Tell students that their responses will serve as the basis for the next class.

DAY 2

1. Ask students to summarize the Warf essay by working with a classmate to complete the "United States Regions Comparison Chart" (Handout 1). Tell students that the purpose of the activity is to develop generalizations about each region in the appropriate categories. When the charts are completed, have the students share their information with the other teams. This can be done through a directed discussion designed to focus on the question students were asked to address as part of their reading assignment. Using the chart in this fashion will permit students to summarize the Warf essay so that the discussion will answer the study question.

2. To conclude this section of the lesson, ask some students to use the chalkboard or overhead to write single sentences speculating on why, as Warf suggests, there has been a gradual decline over the last 50 years in the competitive status of the United States internationally. Statements might include such expressions as these:

> At the end of World War II, only the United States had the economic power to provide substantial direction to the global economy.
>
> Since World War II, many nations have gradually developed economic strength through planning and the wise use of their resources.
>
> The United States has become so dependent on foreign oil that it has lost the economic self-sufficiency it once enjoyed.
>
> Trade and budget deficits have weakened the bargaining position of the United States in the world marketplace.

Conclude the class period by asking the students for their reaction to these speculative statements. As an alternative to this approach, you might present a set of speculative statements of your own design or use the ones included in the lesson and ask for student reaction. Then have the students develop a set of their own speculative statements using the ones the teacher presents as a model.

3. As homework, or as an in-class activity, distribute the United States map (copied from the Appendix of this book) and explain that students are to prepare a color-coded version of the information presented in the Warf essay. The map should include a title, a color key identifying the regions, the major urban center for each, symbols portraying the "new" and the "old" economic activities of each region, and the new immigrant groupings. Challenge the students to suggest why state boundaries are not necessary on the map. Be sure that through the discussion the class recognizes the difference between political boundaries and economic boundaries. Both are a part of the regionalization concept but each uses a different set of criteria in determining what constitutes a region.

DAY 3

1. Have students share and discuss the regional maps they have prepared. Ask them to provide a rationale for the way they structured their maps and to explain how the maps relate to the Warf essay. At the conclusion of the sharing process, collect the maps for evaluation.

2. Now ask the students to retitle the Warf essay. Organize the class into small groups of three or four each. The task of each group is to develop a new title that is both descriptive and dramatic, something that would be attractive to the popular press. Each group must also prepare reasons explaining its choice so that the relationship between the essay and the title is clear. Have each group share its ideas with the rest of the class to determine the most appealing title.

3. Conclude the activity by having the class write a single paragraph response to this question: *"Why has the realignment of the regional economies of the United States been disastrous for some and beneficial for others?"* Students may use their charts and maps as resources in the development of the paragraph. Paragraphs can be discussed by the group or collected for grading, or both.

Alternative Strategies:

To help at-risk students understand the issues in this activity, conduct the first day's lesson as directed but without making the essay assigned reading. On days two and three, use the essay as an oral reading exercise stopping after the section on each region to complete the "United States Regions Comparison Chart" (Handout 1). Work through the chart with the students on a region by region basis.

Enrichment Strategy:

After completing this activity, assign students to read this essay:

Garreau, Joel R., "The Nine Nations of North America," *Washington Post Magazine*, March 4, 1979, as reprinted in Gerald Pitzl, ed., *Annual Editions/Geography 1991-92*. The Dushkin Publishing Group, 1991, 153-59.

Hold a discussion on the approaches Warf and Garreau have formulated about regionalization. Conclude by asking students to suggest their own system of regionalizing the United States.

HANDOUT 1

United States Regions Comparison Chart

Regions	Key Urban Center	New Economic Activities	Former Economic Activities	New Migration	Problems/ Successes
Midwest					
South					
California					
Pacific Northwest					

What is an "American" Car?: Global Interdependency in the Automotive Industry

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Past generations of Americans had little difficulty in recognizing an American car. An American car was big enough to accommodate six passengers and was equipped with a powerful engine, an automatic transmission, and electrical conveniences. A foreign car was small, underpowered, and funny looking.

From a geographic perspective, the distinction between American and foreign cars was also clear. Traditionally, an American car was assembled in the United States by American workers at a factory owned by a United States company, using United States made parts. A foreign car was produced in a foreign country and imported to the United States by boat.

In the 1990s, the traditional differences between American and foreign cars have been blurred. United States-owned companies sell cars in the United States that were produced in other countries, while foreign-owned companies assemble cars in the United States. Further complicating the picture, both United States- and foreign-owned companies assemble models in the United States that contain high percentages of parts produced elsewhere in the world.

Geographers are especially interested in the recent blurring of the distinction between American and foreign cars because one consequence has been a change in where automobiles are produced within the United States and throughout North America. During the 1980s and early 1990s, United States companies closed a large number of automotive plants, while both United States- and foreign-owned companies opened a large number of new ones. The new plants have not been in the same regions as the closed ones. As a result of these locational changes, hundreds of communities throughout the country have had to cope either with rapid growth near new plants or with economic hardships following closures. This paper documents the changes in the United States automotive market.

Foreign Invasion of the North American Automotive Market

The future looked bright in 1973 for United States automobile producers. Sales of 1973 model automobiles reached an all-time high in the United States, 11.2 million units. The "Big Three," General Motors Corporation, Ford Motor Company, and Chrysler Corporation, accounted for nearly 85 percent of the market.

The best-selling foreign car in the United States from the 1950s until the early 1970s was Volkswagen's "beetle," imported from Germany. Young people especially were attracted to the "beetle" as a small, inexpensive alternative to large models that American corporations insisted on selling. At that time, Japanese imports were not well-built and did not perform well at high speed on American highways.

The turning point for Japanese-made cars came during the winter of 1973-74, when the Arab-led Organization of Petroleum Exporting Countries

(OPEC) halted petroleum sales to the United States. The embargo was soon lifted, but then OPEC raised oil prices from $3 a barrel in 1973 to $36 a barrel by 1980. Americans turned to Japanese automobiles because they were much more fuel-efficient than the large "gas-guzzlers" that United States companies were selling. Low prices and high quality attracted other Americans to Japanese products. Japanese automobiles captured nearly one-fourth of the United States market by 1980 compared to about six percent in 1973.

Under intense pressure from the newly elected Reagan administration, the Japanese government adopted voluntary restrictions in 1981 on the number of automobiles that could be imported to the United States. The limits were originally set at 1.68 million vehicles, or 22 percent, of the United States market and were raised to 1.85 million vehicles in 1983. Following record profits by domestic carmakers in 1984, the United States government in 1985 decided not to request that voluntary restriction be continued, but the Japanese government maintained a limit of 2.3 million as a sign of willingness to reduce the trade deficit between the two countries.

To assure unlimited access to the American market, Japanese producers decided to construct assembly plants, known as transplants, in the United States. In 1982, Honda became the first Japanese company to open a United States transplant to assemble its Accord at Marysville, 20 miles northwest of Columbus, Ohio. Ten years later, eight Japanese companies were assembling cars and trucks at 12 assembly plants in the United States and Canada (Table 1). A Korean firm, Hyundai, was also assembling cars at a transplant in Bromont, Quebec. These 13 Asian transplants are capable of producing approximately 2.5 million vehicles per year, or fifteen percent of the total market for cars and trucks in the United States and Canada.

In their first years of operation, the transplants imported most parts from Japan, including such high value components as engines and transmissions. However, in the late 1980s, roughly 200 Japanese-owned parts manufacturers built factories in the United States, primarily to supply the 12 transplants. Japanese manufacturers especially likely to build factories in the United States include suppliers of electrical and electronic components and body hardware, such as seats, knobs, and trim. Transmissions and engines are generally imported from Japan, although Honda, Toyota, and Nissan produce some of their engines in the United States. Bulky, low-value material, such as tires and steel, are generally purchased from United States firms.

In 1991, the Honda Accord became the first Japanese transplant model to contain more than 75 percent United States-made parts. This was an important milestone for a Japanese car, because the United States government defines an American car as one that contains more than 75 percent United States-made parts. Several other Japanese transplant models were expected to achieve the 75 percent level during the 1990s. In computing the percentage of United States-made parts, the government does not care whether an American or a Japanese company owns the plant, as long as it is located in the United States or Canada.

Response of United States Companies

As Japanese carmakers have become increasingly American in recent years by constructing transplants and purchasing United States-made parts, United States carmakers have become less American. United States companies increasingly sell cars with American names that were actually assembled in Japan or Korea. They also obtain some of their parts from plants in Mexico.

During the 1970s United States firms purchased minority shares in Japanese carmakers. General Motors bought 38 percent of Isuzu and 5 percent of Suzuki, while Ford bought a one-fourth interest in Mazda. In 1991, Chrysler owned 12 percent of Mitsubishi. (The Japanese government prohibits foreign companies from acquiring a majority interest in firms.)

During the 1980s, United States firms turned their attention to Korean carmakers. General Motors acquired a 50 percent interest in Daewoo, and Ford acquired a 10 percent interest in Kia. Mitsubishi, partially owned by Chrysler, purchased 15 percent of Hyundai.

United States firms sell cars and trucks in North America that are produced by the Japanese and Korean firms in which they have financial interests. These "hidden" or "captive" imports are sold in North America with American names, a practice known as "rebadging." The hidden imports are designed to provide small cars to North American dealers who are affiliated with United States firms.

Three of the North American transplants represent joint ventures between United States and Japanese firms. The first joint venture was in 1982, when General Motors and Toyota established Nummi. Production for the Nummi was based at a General Motors plant which had been closed at Fremont, California. General Motors and Suzuki entered a joint venture called the Cami at Ingersoll, Ontario; and Chrysler and Mitsubishi, a joint venture called the Diamond-Star (named for the symbols of the two companies) at Normal, Illinois. (In 1992, financially strapped Chrysler sold its share of Diamond-Star to Mitsubishi.) In all three joint ventures the two partners own equal shares. Both United States and the Japanese companies sell the vehicles produced at joint venture transplants.

Ford has agreed to acquire a one-half interest in Mazda's United States transplant at Flat Rock, Michigan. Beginning in late 1992, some of the minivans assembled in Ford's new plant at Avon Lake, Ohio, have been "rebadged" by Nissan, marking the first time that a Japanese firm has agreed to sell vehicles assembled at a plant controlled by a United States carmaker.

General Motors further extended the confusion between North American and foreign production when it created the Geo line. One Geo model is made in Japan by Isuzu. A second Geo model is produced at the Nummi joint venture plant in California and is a virtually identical twin to a Toyota model. The other two Geo models are produced partially at Cami and partially in Japan by Suzuki; both of these Geos are twins to Suzuki models. To further confuse their heritage, the three Geos assembled in North America contain between one-fourth and one-third parts imported from Japan.

United States carmakers have also increased the foreign content in their North American products by manufacturing parts at plants in Mexico known as *maquiladoras*. The Big Three United States firms operate approximately 50 *maquiladoras* in Mexico, employing nearly 50,000 people. Independent producers of automotive parts operate several dozen other *maquiladoras*. Altogether, United States companies have established more than 1,400 *maquiladoras* in Mexico. The chief attraction of the *maquiladoras* is the extremely low wages Mexican workers will work for compared to those in the United States. Most workers at *maquiladoras* earn Mexico's minimum wage, which is approximately 50 cents per hour. The largest number of automotive *maquiladoras* are responsible for bundling wires and other electrical operations that do not require highly skilled workers.

More than ninety percent of the *maquiladoras* have been located in Mexico's northern states that border the United States. Ciudad Juarez is by far the preferred location for automotive *maquiladoras*. Isolated from the country's major automobile centers and market, which are located on the southern end of the Mexican Plateau, Mexico's border towns traditionally possessed few industries. However, Mexico's internal automobile market stagnated during the 1980s, while industries expanded in the border cities that provide relative proximity to the expanding United States market.

Growth in the border cities and stagnation in the interior have triggered large-scale migration within Mexico. The *maquiladoras* act as magnets, luring people from villages farther south where jobs are scarce. Yet, many *maquiladoras* have trouble finding enough workers. Construction of new housing in the border cities has not kept pace with population growth, and water supplies, public transportation, and other services are inadequate.

Changes in Location of Automotive Production within North America

The recent restructuring of the automotive industry has altered the location of manufacturing facilities within North America. Early in the twentieth century, the leading carmakers placed their corporate headquarters, research operations, and assembly plants for slow-selling high-priced models in southern Michigan. Nearly all of the parts manufacturers clustered in southern Michigan as well. However, most of the assembly plants, especially those that produced the best-selling models such as Chevrolet and Ford, were located near large cities such as Chicago, Kansas City, Los Angeles, and New York. Because an assembled automobile is very bulky, producers preferred to assemble them as close as possible to customers. General Motors, for example, assembled identical Chevrolet models for local distribution at ten assembly plants scattered around the country.

During the 1980s, United States firms closed nearly all of their east and west coast assembly plants and built new ones in the interior of the country. Similarly, Japanese firms have selected interior locations for all but one of their United States transplants; the sole exception, Nummi, took over a closed General Motors plant in California. United States firms have relocated assembly plants to the interior because they are selling increasingly diverse products. In the past, each carmaker sold only a handful of distinctive models, with variation only in details such as the amount of trim, the shape of the body, or the plushness of the seats.

After 1960, United States cars began to vary in more fundamental ways, notably by size. Today, four sizes of automobiles are sold in North America, subcompacts (under 170 inches long), compacts (approximately 180 inches), intermediates (approximately 190 inches), and full-sized (more than 200 inches). In addition, a variety of sporty cars, vans, sport utility vehicles, and pickup trucks are available. General Motors alone sells more than two dozen different car and truck models.

Carmakers have difficulty building more than one size of car or truck on the same assembly line. With the fragmentation of the North American market, few models sell more than 250,000 units per year, the capacity of a typical assembly plant. Consequently, United States firms have converted assembly plants that once produced identical models for local distribution into specialized facilities that produce one model for distribution throughout North America. If the entire North American output of a product comes from one plant and the product is bulky and expensive to ship, then the optimal location for that plant is in the interior of the United States rather than on the east or west coast.

Japanese companies reached similar conclusions in selecting sites for new plants that minimize shipping costs to customers. Within the interior, Japanese firms have shied away from large cities, especially those traditionally associated with motor vehicle production, such as Detroit, Cleveland, and Dayton. Instead, they haven chosen sites in small towns on the periphery of metropolitan areas. Part of the Japanese motivation for locating in small towns is a desire to avoid concentration of unionized workers. Japanese managers fear that unionized workers will be reluctant to adopt more flexible work rules, such as organizing into teams and eliminating most job classifications.

Meanwhile, manufacturers of automotive parts have clustered in the interior of the United States as well. Their primary motivation is to be near the new assembly plants because most parts are now delivered on a "just-in-time" basis. Under "just-in-time" delivery, parts arrive at an a
plant within a few hours of when they are
attached to the vehicles rather than weeks
in advance, as formerly occurred.

Conclusion

Confusion in defining what is an Ameri
likely to continue because there is little in
clarify the distinction. United States carm
continue to "rebadge" Asian built vehicle
gaps in their product lines, especially in sr
models. Japanese carmakers wish to maint
reputation for selling high-quality product
avoid a patriotic backlash by building so
in the United States. Workers do not care
the plant is owned by a United States or a
firm as long as it provides employment, a
do not care who owns the plant as long as
receive recognition from the company.

Most Americans do not seem to care wl
cars are produced as long as they are well-
Americans who do care will have a difficu
deciding what is American and what is no

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Table 1
Changes in the Location of Automobile Production 1980 - 1991

1. Closed Assembly Plants

Chrysler	Brampton, Ontario Detroit, Michigan Hamtramck, Michigan Kenosha, Wisconsin (2 lines) St. Louis, Missouri
Ford	Los Angeles, California Mahwah, New Jersey San Jose, California
General Motors	Atlanta, Georgia Cincinnati, Ohio Framingham, Massachusetts Kansas City, Missouri Los Angeles, California (2 plants) Tarrytown, New York Ypsilanti, Michigan

2. Older Plants Closed and Replaced with New Plants Nearby

Chrysler	Detroit, Michigan
General Motors	Hamtramck, Michigan Kansas City, Kansas Pontiac, Michigan St. Louis, Missouri

3. Plants Which Ceased Producing Cars but Remained Open for Production of Trucks

Ford	Edison, New Jersey Louisville, Kentucky Oakville, Ontario St. Louis, Missouri
General Motors	Baltimore, Maryland Janesville, Wisconsin Linden, New Jersey

4. New Assembly Plants

Chrysler	Bramalea, Ontario Sterling Heights, Michigan
Ford	Avon Lake, Ohio
General Motors	Bowling Green, Kentucky Dayton, Ohio Fort Wayne, Indiana Shreveport, Louisiana Spring Hill, Tennessee
Honda	Alliston, Ontario East Liberty, Ohio Marysville, Ohio
Mazda	Flat Rock, Michigan

Mitsubishi*	Normal, Illinois
Nissan	Smyrna, Tennessee
Subaru and Isuzu	Lafayette, Indiana
Suzuki**	Ingersoll, Ontario
Toyota	Cambridge, Ontario Fremont, California*** Georgetown, Kentucky (2 lines)

5. Plants Open in Both 1980 and 1991 - Automobiles

Chrysler	Belvidere, Illinois Newark, Delaware
Ford	Atlanta, Georgia Chicago, Illinois Dearborn, Michigan Kansas City, Missouri Lorain, Ohio St. Thomas, Ontario Wayne, Michigan Wixom, Michigan
General Motors	Arlington, Texas Atlanta, Georgia Flint, Michigan Lansing, Michigan (2 lines) Lordstown, Ohio Oklahoma City, Oklahoma Oshawa, Ontario (2 lines) Ste. Therese, Quebec Wilmington, Delaware

6. Plants Open in Both 1989 and 1991 - Truck

Chrysler	St. Louis, Missouri Toledo, Ohio Warren, Michigan Windsor, Ontario
Ford	Kansas City, Missouri Lorain, Ohio Norfolk, Virginia Oakville, Ontario St. Paul, Minnesota Wayne, Michigan
General Motors	Flint, Michigan Oshawa, Ontario Pontiac, Michigan

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Notes:

*Joint with Chrysler, called Diamond Star
**Joint with General Motors, called CAMI
***Joint with General Motors, called NUMMI

The Automobile Worksheet: A Learning Activity to Accompany *What is an American Car?*

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Introduction:

This learning activity is designed to complement Rubenstein's article "What Is An American Car?" Students will answer a set of questions twice: once before they read the article to preview and focus their attention upon the content; and once to help them locate and review the key information it presents.

Grade Level: This learning activity is designed for grades 7 to 9.

Time Required:

This learning activity requires two or three 40-minute class periods including the time needed to read the article.

Themes/Key Ideas:

This learning activity deals primarily with the theme of movement and the key ideas related to movement.

Concepts:

Accessibility, diffusion, distribution, network, site/situation; break in bulk, innovation, planning, production, sphere of influence, system; land use, resource; central place, export/import, time/space, trade, transportation; core area.

Objectives: As a result of participating in this activity, students will:

Knowledge:

A. Learn the definition of an American car.

B. Learn the definitions of transplants, joint ventures, and *maquiladoras*.

C. Learn the trends in new auto plants: their locations, what they produce, how much they produce, and why.

D. Learn the reasons for increased foreign auto sales and production in the United States.

Skills: Practice reading comprehension

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Attitudes and Values:

A. Develop tolerance and understanding of foreign auto industry expansion in the United States

B. Appreciate how and why the expansion of the foreign auto industry is occurring.

Materials:

The only materials needed are the article and worksheet, both called "What Is An American Car?"

The Learning Activity

Background:

No background is needed by either the teacher or student to read the article or do the assignment. The article provides interesting, useful information about the changing auto industry. The assignment has students practice reading comprehension as they focus upon the main information of the article.

Learning Strategies:

A. Give the students the worksheet and read the directions to them. Tell them to read the article about the American car after they have read through and guessed at the answers on the worksheet.

B. Have students read the article.

C. Have students review and answer the questions in the worksheet, changing any answers that they think were wrong the first time. They may use the article to help them

D. Discuss and grade the worksheet in class requiring students to prove their answers by citing specific passages in the article.

Conclusion:

Ask students to summarize the article and write some generalizations and conclusions about what they have read.

Evaluative Method:

Assign grades according to how well students did on the worksheet after reading the article.

Alternative Strategies:

Have students write out the pages and line numbers of specific passages that prove or disprove their answer. The students must do this correctly to earn credit for their answer.

Enrichment Strategies:

A. Have students debate the pros and cons of retooling an old auto plant versus closing it and building a new one in another location.

B. Have students predict future changes in the auto industry in sales, in production, and in auto designs.

Name: ______________________________ Period: ____ Score: _____ Grade: _____

What Is An American Car? Work Sheet

Before you read the article *What Is An American Car?*, read the following questions and answer them to the best of your ability. After you have read the article, reread the questions and change any answers that you discover were wrong the first time. Feel free to use the article to help you determine the correct answers.

What is the definition of an American car? Check any of the following descriptions that qualify as American cars.

_____1. An American car is a car sold to Americans, assembled in the United States by American workers using American parts and working for an American company.

_____2. An American car is a car made by American workers in an auto plant in the United States owned by a foreign company. The company uses half United States parts and half foreign parts. The cars are sold worldwide, including in the United States.

_____3. An American car is a car made by an American car company, but made in several auto plants, some of which are in foreign countries. Therefore, some of the auto workers are foreigners. The cars are built using all or almost all American parts. They are sold worldwide.

_____4. An American car is a car assembled in an American auto plant by American workers using mostly foreign parts. The auto plant is owned jointly by both an American and a foreign company, but the American company owns the majority of stock. The cars are sold worldwide.

_____5. An American car is a car assembled by foreign workers in a foreign auto plant owned by an American company using American parts and selling the cars worldwide.

_____6. An American car is any car made with 75 percent or more United States parts regardless of who owns the company, who assembles the car, in what country the auto plant is located, or where the cars are sold.

_____7. An American car must be made in America using more than 50 percent United States parts. Who owns the company, the percentage of foreigners who build the car and where the cars are sold does not matter.

_____8. An American car is any car built in America using at least 75 percent United States parts, regardless of who owns the company or where the cars are sold.

_____9. An American car must be built by an American car company using more than 50 percent United States parts. It does not matter who assembles the car or where the auto plant is located. They can be sold worldwide, but the United States must be one of the places the cars are sold.

True or False

_____10. The trend in the 1980s and 1990s is to close old auto plants and build new ones in new cities.

_____11. Foreign car companies are opening new auto plants in the United States while American car companies are usually closing old plants.

_____12. Old auto plants are being modernized by United States companies. Foreign companies are taking over old United States plants.

Matching

Match the term with the definition.

______13. transplant A. Auto parts and assembly plants in Mexico

______14. joint venture B. Foreign car company plants built in the United States

______15. *maquiladoras* C. Car company owned by both a United States and foreign company

Multiple Choice

______16. United States car companies have become less American because they A) sell worldwide; B) use some foreign parts; C) assemble all or part of a car in a foreign country; D) buy parts of foreign companies; E) all of these.

______17. 1973 and 1974 were years which were important turning points for the American auto industry because foreign auto sales increased dramatically. Which of the following is NOT a reason why that occurred? A) the OPEC oil embargo; B) poor safety and high cost of United States cars; C) improved quality of foreign cars; D) increased number of foreign import cars; E) lower prices of foreign cars due to low wages and efficient new plants.

______ 18. ______ 19. (Choose two correct answers.) New car plants tend to be built in which two places? A) near coasts so imported parts do not have to be shipped so far; B) near big cities for a large labor supply and nearby large markets; C) in the United States interior for central location and lower shipping costs; D) in rural or suburban areas to avoid union problems of urban workers; E) in warm southern states where power and labor costs are lower and markets are increasing.

______20. Besides sports cars, vans, sports utility vehicles, and pickup trucks, how many sizes of cars are made in North America? A) 2; B) 3; C) 4; D) 5; E) 6.

______21. A new United States car plant tends to build A) many vehicles of one car model; B) some of two or three car models; C) all of just one car model, but in moderate quantity; D) many different models and sizes of cars to be able to adjust to the buying trends of consumers; E) all of no more than three sizes of vehicles.

Transportation and Urban Life

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Since the origins of the first cities, the hallmark of urban life has been the ability to interact. Cities are an arrangement of people and activities that allows for increased interaction and thus opportunity. At the heart of this interaction is the transportation system, essentially the way we move people, goods, and messages throughout urban areas. In this essay we will first examine some of the ways in which transportation is so vital to urban life, then look at the state of transportation in North American cities and, finally, explore how we got to this state of affairs.

There are some things that transportation in large cities throughout the Americas encourages, including high levels of congestion and air pollution. But the patterns of land use development, economic activity, and the degree of reliance on public transportation are markedly different in Latin America from the way that they are in Canada or in the United States. Still, many of the ideas about transportation and its general role in society are relevant across these areas.

The Importance of Transportation

Most of us are keenly aware of how important transportation is to our daily lives. The transportation facilities we have built and the private vehicles we have at our disposal set the limits of opportunities and constraints in our daily patterns of movement. Transportation gets us to our jobs. A job that might be better could be too far away to accept. On the other hand, we may wish to move to another community but then our job would be too far away. Similarly, we shop at places that are accessible given the transportation system available to us.

Not everyone has the same level of transportation availability. Most cities in the United States have been constructed with the automobile in mind and, although automobile ownership is widespread, there are significant numbers of urban people who are not able, either financially or physically, to use an automobile. These *transit dependents* are, in most United States cities, at a significant disadvantage in terms of access to jobs, housing, shopping, and recreation because of the relatively low quality of public transportation services. In contrast, most people in Canada and Latin America have a much higher reliance on public transportation systems that generally cover more of the urban area, although the quality can be low where there are few resources. Even for households with one automobile there can be significant transportation problems for the second worker in the family. This burden most often falls on women who, even when employed, are usually still expected to take care of the household, and whose transportation needs are often considered secondary.

Transportation is not only important for people but also important for business. Clearly, firms producing goods must have access to transportation facilities to receive materials and to ship products. Businesses need good transportation in order to have access to customers, whether they be other businesses or individual shoppers. Retailers typically try to locate at strategic places in the transportation system. Businesses also need access to employees. During the late nineteenth century, when the Industrial Revolution was transforming the nature of United States cities, many large employers built housing in neighborhoods near their factories to ensure that their employees had a short commute and thus could work the long hours expected at that time. As transportation systems improved, the separation of homes from jobs was made easier and became the norm. Today, one of the biggest problems facing many urban areas is called the jobs/housing imbalance, a situation in which affordable housing is located too far from many employers. This problem is becoming more acute as lower-paying businesses move to lower density suburban areas that are poorly served by public transit. Both businesses and groups such as transit dependents have concerns with transportation planning, as reflected in the accompanying learning activities.

A more general consideration for the importance of transportation to our daily urban lives involves the relationship between land use patterns and transportation. As noted previously, most United States cities have been, and continue to be, constructed for automobile transportation. New development tends to be low density at the periphery of metropolitan areas. New development tends to separate land uses so that housing and jobs are not near one another. New development is physically designed for automobile access. Shopping malls, with their seas of parking, make access very difficult for transit users and pedestrians. Recognizing the important link between land use and transportation, many city governments are now creating new transit systems and encouraging more mixed land use developments.

Transportation and Urban Problems

Given the importance of transportation to our daily lives and the enormous achievements in technology, we might have expected unprecedented new opportunities and enhanced quality of life through the application of these magnificent advances. But the choices we have made about the organization of our cities and the transportation systems serving those cities have instead produced major problems that threaten our daily lives. We will briefly consider three of these problems: air pollution, congestion, and mobility.

Transportation systems, especially automobiles, are the number one polluter of urban air. In spite of increased controls on auto emissions, the enormous growth in the number of automobiles and the number of vehicle miles travelled has overwhelmed most large cities. The pollution breathed by those living in Los Angeles or New York is equivalent to that breathed by a person who smokes two packs of cigarettes per day. Unfortunately, the situation in most large Latin American cities is even worse because the lack of vehicle and other emission controls, huge densities, and congestion create even higher levels of air pollution. Many Canadian cities are looking toward increasing the use of public transit as one way to abate local air pollution and to reduce its contribution toward global warming.

Traffic congestion, according to polls in several United States cities, is one of the leading urban problems on the minds of citizens, and for good reason. Levels of congestion, as measured by reduced speeds and longer peak hours, have gone up sharply in most cities. Congestion increases air pollution by concentrating large numbers of slow-moving automobiles. The costs of congestion can be dramatic. Each year, billions of dollars in fuel costs and in lost wages and time are attributed to congestion. Businesses find that tardiness, absenteeism, and lower productivity are the byproducts of congestion. Finally, congestion has very personal impact, creating both mental and physical stress. Although freeway shootings on southern California highways are the most dramatic examples, the pervasive feelings of anxiety and frustration that are shared by millions of daily commuters is seriously undermining the quality of urban life.

Lengthening the time normally thought of as peak "rush hour" decreases mobility, the ability to travel to desired activities. The impact on transit dependents is particularly dramatic. The average speeds of mass transit vehicles are decreasing, lengthening trips already longer than those by automobile. Congestion decreases the reliability of transit schedules, making it difficult to transfer from one bus to another. Ironically, mobility is shrinking in the face of affluence and technology, both for auto and transit users.

Factors Influencing Urban Transportation

Contemporary urban problems of pollution, congestion, and declining mobility are the products of historic factors that together affect how well transportation systems work. These factors include the growth of large metropolitan regions, separation of land uses, increased dependency on the automobile, changing location patterns, and demographic changes.

Throughout the twentieth century, the proportion of the United States population living in cities has steadily increased. Now more than 75 percent of the population live in urban areas, with about half of these people living in metropolitan areas of more than one million inhabitants. We have had to invent new terms to describe this profound urban growth. The historic city centers of most large urban areas (officially termed central cities) usually are now smaller than the suburban rings that surround them and that make up the rest of what we designate the Metropolitan Statistical Area. Along with this suburban growth the area covered by development has spread outward. Concentrations of large populations now exceed the physical capacity of the local environment to absorb pollutants. It is also becoming more difficult to provide needed infrastructure such as transportation, schools, sewers, and other services.

One of the most critical elements impacting the performance of urban transportation systems is the separation of land uses. The specialization of areas into middle-class residential districts, retail districts, industrial zones, and similar single-purpose areas directly increases the number and average length of vehicular trips. In response to the horrendous conditions of late nineteenth century cities where industry and residences were crowded together in unhealthy proximity, planners in the United States generally supported the notion of separating different kinds of activities to minimize conflict. While the conditions of conflict are far less today, urban populations are generally more sensitive to these conflicts and still push for relatively homogeneous land use patterns. However, there are a significant number of people, either fed up with long commutes and/or seeking a more urban lifestyle, who are pushing to reinsert residences into the office and shopping cores of cities and major suburban activity centers. The developments of such new patterns could significantly reduce the need to make vehicle-based, especially automobile, urban trips.

However, reliance on the automobile remains the overwhelming norm. In large urban areas (with New York City the notable exception), mass transit systems were systematically dismantled after World War I. In one of the most celebrated cases, it is believed that the collusion of bus manufacturers, tire companies, and oil companies destroyed rail lines in Los Angeles, as depicted in the movie *Who Framed Roger Rabbit?* The success of the automobile and the opening of the suburbs to auto-oriented land use and transportation patterns further undercut the role of public mass transportation. Ridership on mass transit peaked just after World War II and fell to its lowest point by 1973. Most private systems became public systems during this time of declining ridership. Since the oil embargo of 1973 there has been irregular and modest growth in the use of mass transit but less than five percent of all urban trips and less than ten percent of all work trips are taken by transit. The automobile, which offers an excellent mode of door-to-door transportation when roads are not clogged, is the major contributor to metropolitan traffic congestion. Regrettably, mass transit systems have languished, unable to compete effectively with the automobile except in certain dense corridors.

Reliance on the automobile and growth of metropolitan areas have generated three distinct patterns of urban development in the 45 years since World War II. Immediately after World War II the focus was on the suburbanization of population. Spurred on by cheap mortgages, highway construction, and rising affluence, people flocked to the suburbs in unprecedented numbers. To one degree or another, suburbanization had been occurring in most large cities since the turn of the century, but the decades after the end of World War II were especially noteworthy for the sheer numbers of movers who were so rapidly reshaping the face of metropolitan areas.

The second wave, the movement of shopping to the suburbs, began slowly about the middle of the 1950s and positively exploded during the 1960s and 1970s. During this time, the historic central business districts (CBDs), the downtowns, declined dramatically as centers for shopping because the more prosperous and auto-oriented suburbanites showed a distinct preference for the auto-accommodating suburban mall.

The third wave of suburbanization involved other forms of employment including both office and manufacturing employment. This third wave is having the most profound impact on urban transportation and the nature of urban life. Before the large scale movement of jobs to the suburbs, the dominant commute in United States cities was workers (usually male) driving from suburban residences to central city (and CBD) jobs. This made it easier for mass transit systems to serve these trips, although many still opted for the auto. Today, the patterns involved in the journey-to-work are much more complex. The dominant commute today is from dispersed residences in the suburbs to dispersed jobs in other suburbs. Such trips are very difficult to serve by public transportation and contribute to traffic congestion throughout suburban areas. While there continues to be congestion in the downtowns of major urban areas, the lives of suburbanites are being undermined by high levels of congestion that affect their journeys-to-work and the other activities that rely so heavily on the automobile.

A final factor underlying change in urban transportation involves changes within the household, or what we often term demographic changes. Vehicle miles travelled and congestion have increased faster than population. Households are smaller but more complicated in terms of their transportation needs. The increased participation of women in the wage labor force has been particularly important in generating new demand for transportation. With two workers in households now the norm, even for households with young children, it is more difficult to find a residential location that "makes sense" for both jobs. Most families find that a second vehicle is a necessity, not only for getting to work but also for making sure that the other routine activities like shopping and getting children to day care can be accommodated. Over half of all households now have two or more vehicles. These trends were especially important during the 1980's when the "baby boom" generation came of age and huge numbers of people followed this trend. During the 1990's there will be a definite slackening in the growth of such pressures as the smaller post-baby boom generation comes of age.

Conclusions

The twentieth century has witnessed an astonishing change in the nature of transportation and the nature of cities. Our daily lives have been profoundly changed by new locations for activities in cities and new ways of getting there. For most people, these changes have meant tremendous new freedoms and opportunities to participate more fully in the full range of urban activities. However, we have begun to reach the point where the quality of our lives is being severely challenged by the cities and transportation systems we have created. Whether it be in terms of higher levels of air pollution or the stress and cost of congestion, most people living in large cities are paying a higher price than others. Transit dependent people lack the same range of opportunities as those with access to reliable automobiles. Moreover, many of these people live in areas of cities where air pollution is highest, a double peril.

The key to improving urban transportation and urban life is to understand that transportation itself is only one part, although a big part, of the larger urban puzzle. The kinds of work we do, the types of land use patterns we encourage, and the way we rank transportation investments will all have significant impacts on the type of urban life we will have in the future.

Planning a Light Rail System: A Learning Activity to Accompany *Transportation and Urban Life*

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Introduction:

This simulation encourages students to explore the competing values of special interest groups in planning an urban mass transit system. The exercise makes it clear that every alternative involves a unique set of costs and benefits.

Subject/Grade Level: Grades 9-12

Time Required: One class period

Themes: Relationships Within places: Humans and Environments

A. How people interact with the environment.

   1. People interact with the environment to obtain a variety of resources that meet their needs and wants.

   2. People perceive the environment in different ways.

B. How people adapt to or modify the environment.

   1. People adapt to or modify the environment in different ways.

   2. People's adaptations to or modifications of the environment are influenced by the characteristics of the environment in which they live.

   3. People perceive environmental modification in different ways.

C. Relationships within places include changes in the environment.

   1. Technology results in changes in the environment.

   2. Environmental change may influence regional systems.

Concepts: conservation, ecosystem, environmental perception, externality, land use, opportunity cost, planning, pollution, population

Objectives:

Knowledge: At the conclusion of this exercise students should recognize that urban mass transit can offer many benefits to a community and that these benefits carry direct and indirect costs. Any mass transit system should reflect the attitudes and values of the community it serves.

Skills: At the conclusion of this exercise students should be able to:

A. Acquire data about people's geographic activities and the human and physical characteristics of places from examining a map

B. Develop systematic classifications of descriptive data; prepare maps using area and point data; prepare well-constructed interpretive oral and written reports to accompany maps and other geographical data; synthesize information from geographic evidence

Attitudes/Values: At the conclusion of this exercise students will have analyzed the specific problem at hand. Working as part of a group they will have examined possible alternatives, made a decision, and developed the rationale to support their decision. Students will have considered the consequences of their decision. Finally, they are asked to examine how the decision they made fits with their overall value system.

Materials:

Make one copy of "The Light Rail Scoring Rules" (Handout 1) for each student. Make four copies of "The Light Rail Planning Map" (Handout 3) for each student.

Procedures:

1. Divide the class into six special interest groups:

   Elected City Officials

   The Business Forum

   Taxpayer's Union

   Suburban Homeowner's Association

   Environmental Activists

   Renters for Transit Access

   Refer to the accompanying essay for ideas on the interests of each of these groups.

2. Distribute Handout 1. Carefully review the assignment and the rules. Distribute two maps to each person in every group. Allow 15 minutes for the groups to discuss, plan, and score their routes. Collect a final copy from each group.

3. Divide the class into general interest groups so that each new group now has at least one member for each special interest. Distribute additional maps as necessary. Each group is given 15 minutes to discuss, plan, and score their routes. Collect a final copy from each group.

4. Compare the routes favored by the various special interests with the routes adopted by the mixed interest groups. Discuss the differences in the decision making process between the special interest groups and the mixed interest groups. How did the process of decision making differ? Which special interest groups were most successful in minimizing their costs and/or maximizing their benefits?

Evaluation:

Each student should prepare a brief report (150-300 words) on the negotiations. Where was compromise difficult, or impossible? What negotiating strategies seemed to offer the greatest success?

Enrichment: Students who are interested in this kind of activity could examine how variations in the scoring system affect the probable outcome. Also, a blank grid system (Handout 4) is provided to allow students to develop their own specific scenarios using various terrain features.

HANDOUT 1

Light Rail Scoring Rules

The Assignment: You are a member of a special interest group that has specific concer the route for a proposed light rail mass transit system through the community. The new ma system has the potential to reduce the rush hour traffic congestion faced by suburban comr The system could increase the mobility of transit-dependent residents who live in high dens neighborhoods in the urban area. The business community stands to gain from improved transportation to and from the workplace. Of course, these gains are not without costs. Tax groups are concerned over the initial costs of constructing the system. Some routes are sig more costly than others. Environmentalists are particularly interested in protecting sensitive habitats in the region.

Step 1: Meet with your interest group members. Carefully go over the rules and procedu Examine the section of the penalty table that pertains to your special interest. Your group m conclude that the costs of the transit system are mitigated, or even outweighed, by the ben offers to your members. If you wish to award benefit points for transit service to your group "Benefit Point Table." Your group must be prepared to explain your decision regarding the distribution of benefit points. Determine the goals of your group. Plot out your route. Calcul number of penalty points and benefit points (if any). Subtract benefit points from penalty po determine your score. Turn in the final copy of your route along with point total.

Step 2: When told to do so, form a new group. This new group is a general interest grou new group must reach a decision on a route for the light rail system. Decide on a process f decision making. Plot your route, calculate penalty points and benefit points using the "Ben Table" developed by each special interest group. Determine the total score by subtracting benefit points from total penalty points. Turn in a final copy of your route and point total.

The Rules: The light rail system must run from any one of the top most cells to any one bottom most cells. Plan your system so that it has the lowest net cost: total costs minus tot

Scoring: Each cell that you enter costs 3 points. There is an additional cost for entering cells. These penalty points vary from one special interest group to another.

HANDOUT 2

Penalty Table

As your group plans its system it must keep in mind the economic, environmental, social, and political costs associated with the various alternative routes. Each cell that your transit line enters costs three points. There are additional penalty points that are added to the basic cost of each cell. The penalty points vary from one group to another depending on the nature of the cell being entered. For example, if the group representing elected officials decides to enter a cell containing wildlife habitat, the cost is four points (three points for the cell plus one penalty point reflecting the value elected officials place on wildlife habitat). On the other hand, if the group representing environmentalists takes their proposed transit system into a cell containing wildlife habitat, the cost to them is seven points (three points for the cell plus four penalty points reflecting the value environmentalists place on wildlife habitat).

	Low Density Suburban	Industrial Development	Wildlife Habitat	Hills	High Density Apartment
Elected Officials	1	2	1	1	1
Business Forum	1	3	1	1	1
Taxpayer's Union	1	2	4	1	1
Homeowner's Association	5	1	1	1	1
Environmentalists	1	1	2	4	1
Renters for Transit	1	1	1	1	2

The benefits from a mass transit system are somewhat more subjective (difficult to measure) than the direct costs. However, certain interest groups may perceive that direct benefits would flow from the creation of a transit system. For example, environmentalists might conclude that increased access to mass transit would reduce automobile related air pollution in high density apartment communities. If the members of your interest group feel that there are likely to be specific gains from the creation of a transit system, those gains should be factored into the overall decision. One of the decisions your group faces is trying to determine the specific benefit you will gain, if any, from taking the system into each of the various cell types. The possible payoff for each cell type should range from 0-4.

Benefit Table for: ________________________________

Low Density Suburban	Industrial Development	Wildlife Habitat	Hills	High Density Apartments
________	________	________	________	________

HANDOUT 3

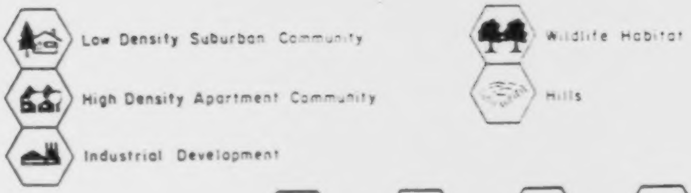
LIGHT RAIL PLANNING MAP

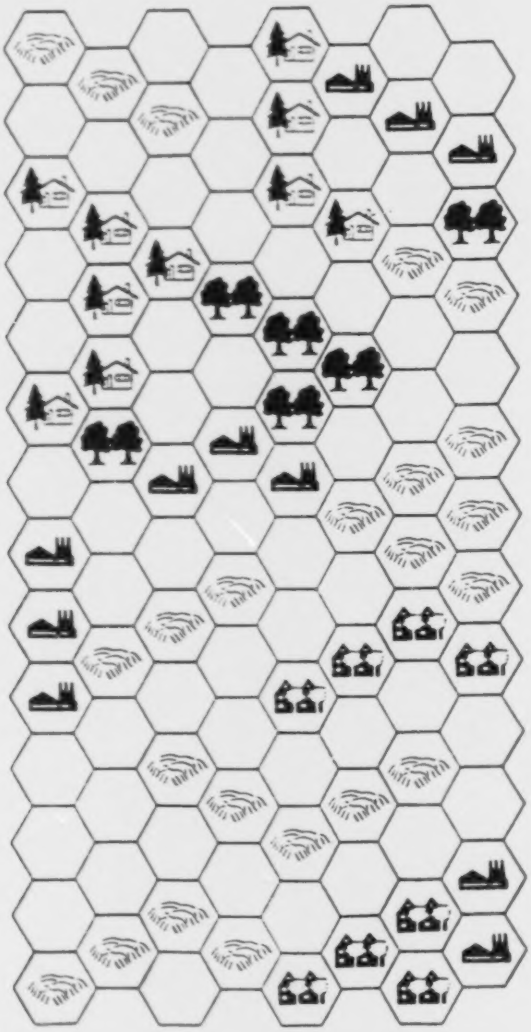
Group Number ______

Total Penalty Points ______

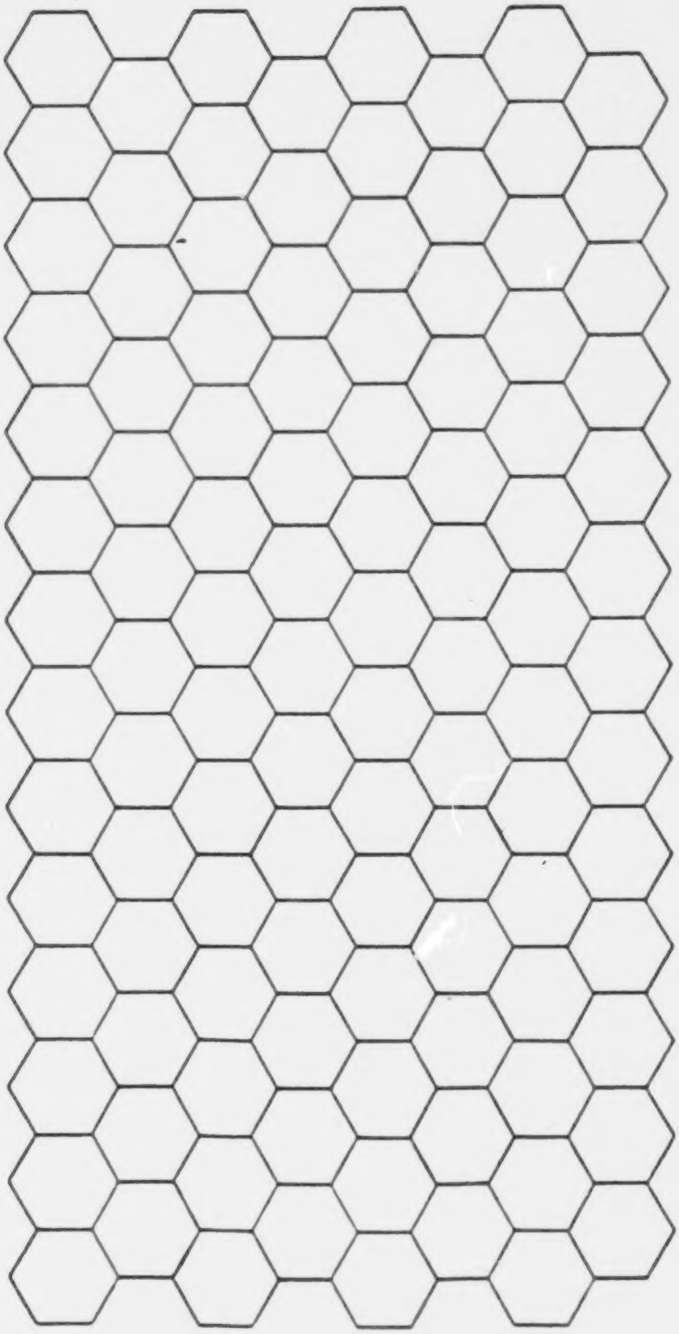
(Minus) Total Benefit Points ______

Total Net Points ______


Low Density Suburban Community
High Density Apartment Community
Industrial Development
Wildlife Habitat
Hills



HANDOUT 4



The Drug Industry in the Americas: The Andean Cocaine Connection

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In a remote valley somewhere high in the eastern Andes of Peru a Quechua-speaking Indian tends a small patch of bushes that produces a leaf known locally as "green gold." In some distant United States city, recreational drug users consume the product that results from the manufacture of the Indian's "green gold," although now it is, in the parlance of the drug trade, "white gold." Herein lies one of the most powerful linkages that exists today between the United States and Latin America.

It is the cocaine connection. It involves millions of people in Latin America and even more millions in the United States. The retail value of the world's illicit drug trade is presently estimated at half a trillion dollars annually, and the most of that trade is in cocaine. Of all the cocaine produced in the world, an estimated 85 percent is consumed in the United States and virtually all of the coca leaves used in production of cocaine are grown in Latin America.

The Coca Bush

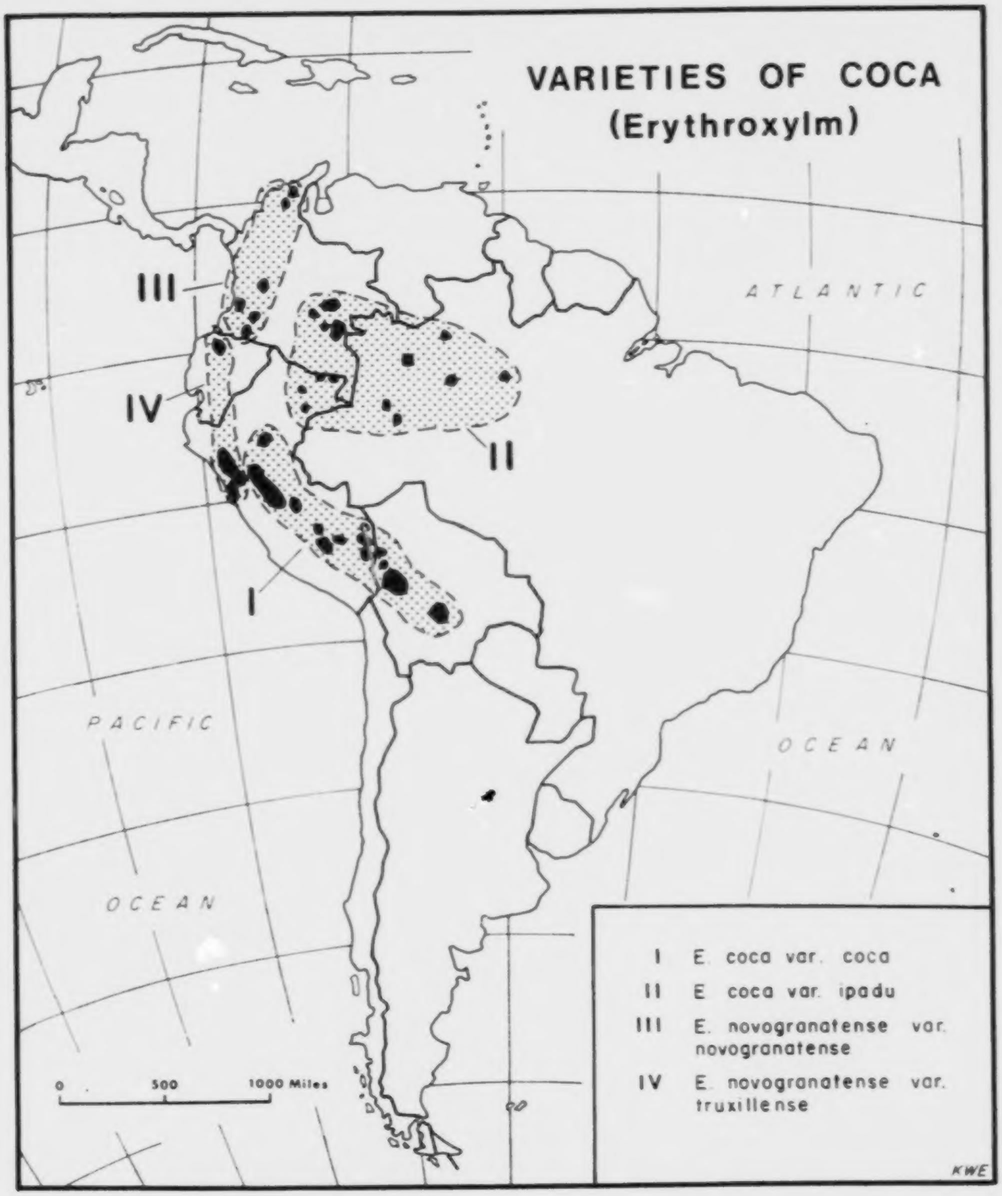
The coca bush (*Erythroxylum*) is indigenous to South America where its 250 varieties are found from the Straits of Magellan to the Isthmus of Panama. The leaves of the bush contain a number of alkaloids (nitrogenous organic salts that have a physiological effect on humans) in varying amounts up to two percent of the weight of the leaves. One of those alkaloids is the stimulant cocaine. Some cocaine is present in many of the varieties of *erythroxylum*, but only a few contain sufficient amounts in extractable form for either traditional use or for commercial production.

The most important variety is *Erythroxylum coca var. coca (E. coca var. coca)*, also known as Huanaco coca. It grows in the Upper Huallaga Valley of Peru and south into Bolivia (Map 1). It is the highest yielding variety of coca and accounts for the majority of all commercial production. In Peru, the world's leading commercial coca producing nation, this variety accounts for 95 percent of all production. Another commercial variety is *E. coca var. ipadu*, or rainforest coca, which grows in the western Amazon region of Peru, Bolivia and Colombia. Its alkaloid yield is much lower than Huanaco coca, but its adaptability to tropical rainforest environments has led to greatly expanded production in recent years. The third commercial variety is *E. novogranatense var. novogranatense*, or Colombian coca. This variety has a somewhat lower alkaloid content, and it is difficult to process compared to others. Its main advantage is that it is adaptable to a wide range of environmental conditions, including those found in Colombia where it is the main variety grown. These three varieties of *erythroxylum* account for virtually all of the commercial coca and only five South American countries have significant production with Peru, Bolivia, and Colombia clearly dominant (Table 1).

Coca Versus Cocaine

When used in the traditional manner by Indians and Mestizos in South America, the coca leaves are chewed mixed with lime resulting in modest releases of the stimulant cocaine into the bloodstream.

MAP 1


VARIETIES OF COCA
(Erythroxylm)
III
IV
II
I
ATLANTIC
OCEAN
PACIFIC
OCEAN
0
500
1000 Miles
I E. coca var. coca
II E. coca var. ipadu
III E. novogranatense var. novogranatense
IV E. novogranatense var. truxillense
KWE

White, Peter T. Coca: An Ancient Indian Herb Turns Deadly. *National Geographic*. Vol. 175, No. 2. Jan. 1989. p. 24-25. Courtesy, National Geographic Society.

TABLE 1
Estimated Coca Acreage in the Andes by Country, 1990

Country	Acreage
Peru	250,000-500,000
Bolivia	150,000-250,000
Colombia	55,000-105,000
Brazil	Modest amount- increasing
Ecuador	Modest amount

Source: *Economist*, July 21, 1990

A typical traditional user will ingest about .03 grams of cocaine per day. When used in its more concentrated form as processed cocaine by drug users in the United States, the rate of cocaine ingestion per day increases to an average of one or two grams, or 30 to 60 times greater than that for chewers. Herein lies something of a paradox. Both the Indian who chews coca leaves and the American who snorts cocaine are ingesting the same stimulant but with markedly different results. For the Indian the result is a mild stimulation with no apparent ill or lasting effects. For the American, the result is a pronounced stimulation or high followed by an equally pronounced crash which can result in addiction with lethal consequences. The inescapable conclusion is that this is a substance that when used in one form is relatively harmless but when used in another form can be deadly. Viewed in this way, the use of coca leaves in South America and the use of processed cocaine in the United States share very little other than the raw material from which both products derive.

The Cocaine Production Cycle

The coca industry begins with one of the most traditional of all Latin American peasant activities: slash and burn agriculture. The grower, with the help of hired labor, first clears his land of trees and undergrowth. He then buys coca seedlings which are transplanted to the newly cleared land. A typical two *hectare* coca farm will require 20,000 seedlings all of which are hand planted. The coca fields are regularly weeded for the first 18 months at which time the bushes reach maturity. All of these are labor intensive activities and result in the creation of jobs for both locals and migrants. Much of the work is seasonal and large numbers of laborers, including college students from distant towns and cities, migrate to the coca areas for brief periods of work at wages well above what they could earn elsewhere.

Once the coca bush begins yielding leaves, which is usually within six months to a year after transplanting, they can be picked four or five times a year and the bush will remain productive for approximately 30 years. Those growers producing leaves for legal use within Peru and Bolivia are controlled by government agencies in both countries. For legal production, growers are paid about one-fourth what the black market offers for leaves destined for the export cocaine trade. The incentives for producers to work through the black market are rather substantial economically, and even legal growers withhold a significant portion of their production for this purpose.

The leaves are picked, dried and then processed by the grower or, as is more common, sold to a local processor. The grower is paid for his leaves in cash from which he must pay labor, transport and other costs. One cost that the grower must bear, a cost that is ubiquitous to the coca industry at every level, is the payoff to the very people responsible for controlling coca production. Political corruption is endemic in most Third World countries, the result of low pay and long hours for civil servants, and a traditional acceptance of such practices. The result is that the ones who benefit most economically from the cocaine trade in the Andes are those charged with fighting it.

The initial processing of coca leaves to coca paste occurs in the eastern Andes and usually quite near the coca fields. The process is relatively uncomplicated and does not require the use of complex technological and organizational structures. The processor buys leaves from local growers and assembles them at his jungle lab where a pit lined with plastic or made from concrete has been prepared. The leaves are placed into the pit along with water and carefully measured quantities of several chemicals in various combinations. Of the chemicals required, lime, kerosene and sodium carbonate are easily obtained while the fourth, sulfuric acid, must be smuggled in from the few industrial centers that exist in the Andes. The process, known as maceration, takes about five days and involves several stages. Maceration yields two products that have commercial value. One is high quality coca paste with a cocaine content of 30 to 40 percent that is ready for the next process which will extract the remaining impurities. The other is a lower quality coca paste known as "chicle" which is sold as "bazooka" or smoking cocaine both in the Andes and the United States. Containing many impurities, including kerosene, bazooka is one of the most lethal forms of cocaine.

The original volume of leaves has now been reduced in weight by 99 percent which is the major reason coca paste is manufactured near the coca farms. The value of the leaves when converted to coca paste has increased by approximately 400 percent, reflecting a significant value added for the processor given the relatively small actual costs involved in manufacture. The production of coca paste results in the creation of more local jobs and infuses significant money into the local economy. It also adds significantly to local water pollution as the used chemicals from coca paste pits are emptied into streams.

One impact of the coca economy on the inhabitants of the eastern Andes has been a shift from a barter economy to one based on cash. Everyone, it seems, now has money. This has led to the growth of a consumer economy based on goods imported from distant cities. A tipoff that a town in the eastern Andes is involved in the coca trade is the presence of new car dealerships and other establishments selling mass produced consumer goods, particularly electronics. Other features include assorted services characteristic of areas going through an economic boom in a frontier setting such as bars, casinos, houses of prostitution and hotels for migrants. From a sociological point of view, many of these changes are not highly desirable and some are probably not reversible.

A particularly negative aspect of the coca industry for the inhabitants of the eastern Andes is the use by locals of low quality coca paste, or bazooka, for smoking. Migrant coca workers develop the coca paste smoking habit while working in the coca fields and labs. Many receive partial payment for their services in the form of low grade coca paste which they carry back to their towns and villages both for their own use and for sale. Many very young indigenous inhabitants of the Andes, who reject their parents' more traditional practice of coca chewing to which they attach a social stigma, have become the primary consumers of bazooka. The user is exposing himself/herself to an extreme health hazard because the drug in this form contains toxic elements utilized in the manufacture of coca paste, and the volume of impurities exceeds the cocaine in bazooka. Once addicted, bazooka users turn to theft, robbery, and prostitution to obtain the money to support their habit. The result in the Andes has been the self-destruction of hundreds of thousands of people, mostly children. Coca paste abuse in the Andes challenges the notion that the cocaine industry in South America, or any drug industry anywhere, can function totally as a pass through economy where the producing countries benefit economically without the negative social consequences suffered by the consuming countries.

At this stage the coca paste, which now has a very high value per unit of weight, undergoes its final manufacture to produce pure cocaine (cocaine hydrochloride). The processes involved in cocaine refining are quite sophisticated and require complex equipment, technical expertise and imported precursor chemicals. In the early years of the present cocaine boom, the refining labs were located in Chile where a cottage industry evolved to produce the final product. A change in government in that country led to relocation of the labs north to Colombia by the mid-1970's. Geographically, Colombia is well situated. Miami is closer to Baranquilla, Colombia, than to Chicago.

The Colombian connection begins with the movement of Andean coca paste to refining labs in Colombia. Scores of clearings in the eastern Andes of Peru and Bolivia function as airstrips for the transfer. The coca paste is assembled at the makeshift airstrips under the supervision of Colombian middlemen. Colombians piloting small planes land, offload cargoes of assorted consumer and other goods, take on a load of coca paste, and are back in the air within minutes for the flight north. All of this is accomplished, all too often, under the watchful eyes of local authorities. Once in

Colombia the coca paste undergoes its final manufacture before shipment to the United States.

In the refining labs coca paste is first converted to cocaine base and then to cocaine hydrochloride ($C_{17}H_{21}NO_4$) which is 90 percent pure cocaine. In the process every 2.5 pounds of coca paste yields one pound of pure cocaine. The value added as a result is substantial. The pure coke is now worth $11,000 per kilo, or 18 times the original investment in coca leaves and four times the value of the coca paste used in its preparation. And the vast majority of the value added, possibly as much as 90 percent, is profit (Table 2).

Cocaine refining and distribution are both the most complex and the most profitable activities for the South Americans involved in the industry. The emergence of the infamous Colombian drug trafficking cartels, of which there are four, resulted from a need for organization at this end of the industry, and from a desire to exploit the enormous profits available to those who controlled the transport of cocaine to foreign markets. They provide protection for the industry through political payoffs, intimidation of authorities, and selective use of violence. They secure the needed chemicals, launder the drug profits, and handle all international aspects of the business.

The final stage at the South American end of the industry is the movement of cocaine to its ultimate markets in the United States and increasingly to Europe. To accomplish this, the cartels have organized an efficient transportation network, all of it clandestine. The majority of cocaine travels to the United States by way of noncommercial carriers with private aircraft, the most common means (Table 3). The cocaine is taken first to intermediary or stopover locations in the Caribbean, Central America or Mexico and then on to the United States. The fact that almost all cocaine shipped north, more than 90 percent by recent estimates, enters the United States without detection is an indication of the efficiency of the cartels' transport network. With most entering by way of the Gulf states with Florida as the leading point of entry, it is sold to retailers who cut or dilute the pure cocaine with sugar or flour. The cocaine then passes through several levels of middlemen before eventually reaching the customer.

The retail value of the street cocaine is about $90,000 per kilo, or about 12 times the value of the pure cocaine that left Colombia. If the total value added to this product from coca leaves to street cocaine is calculated, the increase is a truly staggering amount exceeding 20,000 percent of the costs of the raw material. At least 90 percent of that is profit for someone along the way. The grower receives less than one percent of the street value; the cartels receive about ten percent plus some share of the profits earned in the United States' market; but

TABLE 2

Value Added From Coca Leaves to Street Cocaine, 1990

Coca Leaf	
Yield per hectare	1700 kg
Price per kg:	$2.10
Coca Paste	
Yield per hectare:	17 kg
Price per kg:	$875
Pure Cocaine	
Yield per hectare:	6 kg
Price per kg:	$11,000
Street Cocaine	
Yield per hectare:	9 kg
Price per kg:	$90,000

Source: *Economist*, July 21, 1990

TABLE 3

Cocaine Seizures from Various Smuggling Conveyances, 1984 (percent of total volume)

Conveyance	Percent
Non-Commercial Vessels	11
Commercial Air	18
Commercial Vessels	8
Land Transportation	1
General Aviation Aircraft	62

Source: Wisotsky, *Breaking the Impasse* , 44

by far the greatest share of the profit is earned, banked and spent in the United States.

The Future

It is fair to say that United States' efforts to date to control the coca industry in South America have failed. Latin Americans, through official and unofficial channels, have tried for years to convince the United States that the answer to the cocaine problem does not really lie in South America at all. The ethnocentric notion that what is good for the United States is good for the world, and what is bad for the United States is bad for the world is a major part of the problem. If, by some miraculous effort, coca production in South America could be ended, would cocaine disappear? The answer is likely no. The coca bush is already being grown successfully in other tropical areas. What perpetuates the export cocaine industry and the illicit drug industry in general is demand, and so long as that remains high, someone somewhere will meet it.

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Eradicating Coca: A Learning Activity to Accompany *The Drug Industry in the Americas: The Andean Cocaine Connection*

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Normal, IL

Introduction:

This is a role-playing activity written to accompany the essay "The Drug Industry in the Americas: The Andean Cocaine Connection." It is designed to help students learn about the geography of cocaine production, distribution, and use in both South America and the United States. There are two broad objectives to this activity: 1) to understand the economic, social, political and geographic characteristics of the cocaine industry; and 2) to think about the moral and ethical questions raised by it.

Grade Level:

This is most appropriate for high school students, grades 9-12, because of the reading level. With added support, middle school students could participate as well.

Time Required: This activity will take four to five days of 50-minute periods.

Themes/Key Ideas: This is a complex lesson which entails many themes, including:

A. Relationships within places include how people interact with the environment.

B. Relationships within places include how people adapt to, or modify the environment.

C. Movement involves linkages.

D. Movement demonstrates interdependence.

E. Relationships exist among regions.

Concepts:

Concepts emphasized in this activity are: accessibility, diffusion, acculturation, culture, spatial interaction, transportation, export/import, communication.

Objectives: As a result of participation in this learning activity, students will:

Knowledge:

A. Identify the primary cocaine producing and consuming nations.

B. Understand how the increased demand for commercial cocaine has had an economic, social, political, and cultural impact upon the inhabitants of cocaine-producing nations.

C. Identify the major steps involved in the production and distribution of cocaine.

D. Analyze how the cocaine industry has created an economic linkage between the United States and South American nations.

E. Analyze the geographic factors that determine the location of the coca bush growing area.

F. Analyze the geographic factors that influence the production and distribution of commercial cocaine.

G. Trace the history and diffusion of coca and cocaine from the New World to the Old World.

H. Understand the role played by many individuals (such as government officials, Colombian Cartel members and coca growers) involved in the production and distribution of cocaine.

Attitudes/Values:

A. Engage in a role-playing activity that will enable students to empathize with individuals currently engaged in the production and distribution of cocaine.

B. Develop a position and generate support for the following question: Are the producing or consuming nations more to blame for the social, political and economic problems stemming from the cocaine industry?

Materials:

A. Pre-Post Test

B. Reading Discussion Guide

C. One copy of "The Drug Industry in the Americas: The Andean Cocaine Connection" for each student

D. Thirteen individual role cards (Handout 1)

E. Copies of Handout 1 for each Congressional Investigator

F. Three to four instructions for Congressional Investigators (Handout 2)

G. One copy of Senator/Representative role card for each remaining student (Handout 3)

H. Name plates for each role-player (student-made)

The Learning Activity

Background

"The Drug Industry in the Americas" describes in depth a complex, interconnected and interdependent relationship between supply and demand that affects the lives and welfare of millions of people ranging from farmers in South America to recreational drug users in the United States. It also raises an important question: who is responsible for the problems caused by the cocaine industry, the producer or the user? That is the central question of this role-playing activity and the central question in formulating a real, long-lasting solution to the dilemma created by the cocaine trade.

The essay makes these points:

A. The illicit drug industry is large, multinational and the most important economic link between the United States and South America today.

B. There are many varieties of coca bush; distribution depends upon a variety of geographic factors such as elevation, soils and growing season.

C. Coca use in South America differs from cocaine use in the United States. Different cultures use resources in different ways. Coca chewing is central to the culture of Andean Indians, and may even be beneficial. Cocaine use by Americans and Europeans is harmful.

D. Coca is an example of a substance that originated in the New World and diffused to the Old World. Other substances that originated in the Americas include tobacco, potatoes and tomatoes.

E. Coca use has varied through time in South America, Europe and the United States. Its history is worth noting.

F. Today's cocaine industry is demand-driven: United States demand stimulates South American production.

G. For the most part, coca is grown in areas beyond control of local government and where economic opportunities are few.

H. Geographic factors control the locations of the growing areas as well as where the coca is processed and refined.

I. The cocaine industry has had an enormous impact on South American economic, cultural, social and political life. It has changed the economies from barter to cash, caused massive migrations and ruined the lives of hundreds of young people who work in the trade or peripheral businesses.

J. The cocaine cartels serve a very specialized function of marketing and distribution.

K. The cocaine industry cannot be viewed in isolation. It must be viewed in the context of the regions in which it is grown, processed, distributed and used.

Learning Strategies

The outline suggested here should be modified to reflect the needs and abilities of your students.

The intricacy and breadth of the relationships described in this essay make it difficult to construct a straightforward, standard teaching activity. But a role-playing activity is ideal for involving students in such unwieldy real-life situations. Role-playing activities develop authentic understandings in students and give them an opportunity to analyze complex situations. They also allow students to deal with important contemporary problems and to make decisions about them. The model suggested for this activity follows that developed by Fannie and George Shaftel as described in Models of Teaching (Joyce and Weil 1986).

The activity asks students to play a role representing an individual involved in the drug industry. The setting for the role playing is a joint Congressional hearing on the cocaine industry.

This is the situation

It is clear that the United States policy of eradication of cocaine production in Peru, Ecuador, Colombia, Brazil and Bolivia has failed. The policy has cost millions of dollars, and has only caused bad relations with these countries. They are threatening to break diplomatic relations with the United States, claiming that the drug industry is the United States's problem, not their problem. Congress is holding hearings to investigate the entire industry and to decide on future policy. It would like to determine the best policy not only to stop the flow of drugs, but also to stop drug use in the United States.

Thirteen individuals testify before the hearing. They are questioned by a team of **three or four Congressional Investigators**. The remaining students serve as **Representatives and Senators**. They may ask questions of witnesses, but their primary role is to write a resolution recommending future United States policy based on the testimony of the witnesses.

Role summaries for each **individual** are provided (Handout 1). These are in the form of questions that may be asked of each role player during testimony. Students will learn their roles and develop answers to the questions by reading and discussing the essay.

The **Congressional Investigators** receive a list of questions and the points that they should have each witness make. They must sequence the questions to ensure the points are made effectively and logically.

Representatives and Senators keep a summary of points made and will write a resolution expressing their opinions and a reasoned justification for it after hearing testimony.

All students will discuss the essay before beginning the role playing.

DAY 1-2

Phase One: Warm Up the Class—Thinking About It

Introduce the topic and have students read "The Drug Industry in the Americas." It is a lengthy yet compelling piece. A pre-post test (Handout 4) is provided to focus student attention on some of the important issues and to challenge pre-conceived notions. A reading discussion guide (Handout 5) is provided if you feel it is helpful to have your students read to answer questions. You might want to preview the activity in one class period using the pre-test, assign the reading for homework, and proceed in the next class meeting.

[Alternatively, you may wish to use an adaptation of Brown and Palincsar's technique, Reciprocal Teaching: 1) Ask students to read the entire essay but assign groups of three or four a few specific pages which they must 2) summarize and 3) generate a few questions about. 4) In class, discussion is led by the students summarizing and taking turns asking and answering questions. This activity is designed to encourage student question-asking behaviors.]

To proceed with the activity, review the topic briefly. Try to sensitize the class to the central dilemma and explore the issues to pique their interest. Ask students to share what they know about cocaine use and any new information they learned from the reading. Explain the basic premise to this activity (Joint Congressional hearing), what role-playing entails and your expectations for student participation. Set the scene. Make it clear that the testimony presented will be honest and that the witnesses know that they are free from criminal prosecution.

Phase Two: Select Participants—Getting Started

Briefly explain the roles and ask for volunteers. (You may wish to assign roles rather than give students a choice). Remember, there are 13 individual roles of varying length. A team of three or four will serve as Congressional Investigators. The remaining students will role-play Representatives and Senators. Since this last group is un-named, ask these role-players to choose a real representative or senator to role-play.

DAY 3

Phase Three: Set the Stage—Getting Ready

Distribute the role cards (Handout 1) to the 13 individuals. These consist of a brief description of the role and questions they are likely to be asked. Each student must find the answers to the questions, that is, find out more about his/her character, from the reading. You may want to assign a Representative or Senator to help each character develop his/her role. (Note: Another option would be to have 13 two-person teams for each individual character. One would role-play the actual character, the other could serve as his/her attorney-counselor. Two heads might be better than one to develop the full role. This strategy might leave very few to play Senators/Representatives).

Distribute to the Congressional Investigators the list of roles and questions (Handout 1) and points that they must make (Handout 2). Allow them to divide the questions up among themselves and to coordinate a strategy to insure they are efficient and logical in their questioning. You might suggest they develop a checklist to keep track of answers. Remind them that they are lawyers. Real lawyers use legal pads and make careful lists of questions, notes and arguments in preparation for hearings.

Distribute directions to the Senators and Representatives (Handout 3). Explain that their work really begins with the end of the hearing, and that they will have to listen carefully, take notes, synthesize and evaluate the testimony to decide policy later. Remind them that they may ask questions, but that they generally let the Congressional Investigators do that. Their questions usually clarify a specific point. Decide the format you would like the students to use to produce the resolution.

Have each participant make a name plate for him/herself. Check that each student is comfortable with his/her role. Arrange the room hearing style. Students may wish to dress according to their role, but do not emphasize this. The characterization is what is important, not appearance.

DAY 4

Phase Four: Enactment—"Doing It"

You may wish to invite others to observe this activity or video-tape it for later analysis.

Begin the role-playing activity. One Senator/Representative (the senior member) may call the hearing to order, briefly explain its purpose, and introduce the team of Congressional Investigators. The Congressional Investigators proceed by calling for the first testimony. They may order the witnesses in any way they wish. Continue through all the testimony. This should take one 50-minute class period. At closing, request that each Senator/Representative prepare a draft resolution. You may wish to have all students prepare a draft resolution.

DAY 5 Conclusion

Phase Five: Discussion and Evaluation—Talking About It

Give the Senators and Representatives time to caucus, compromise, and prepare a single resolution while you debrief the rest of the class. Review the events of the day before, the major arguments, testimony, what went well and what did not. When the Senators and Representatives are finished, bring their resolution to the class. How well does it reflect a new understanding of the geography of the cocaine industry? What would be the consequences of enactment in North America? In South America? Ask students to make generalizations about the cocaine industry and drug policy.

Evaluation

These are some suggested activities which could be used to evaluate student learning:

A. Ask students to rate selves according to several criteria, such as the realism of their role-playing, their effectiveness, the quality of their work, how well they felt they understood the complexities of the cocaine trade, what was the level of their effort and how much they learned.

B. Ask each student to choose a role (not one he/she played) and to summarize the effect of the drug industry on that person's life.

C. Have students prepare sketch maps of South America and North America illustrated with details of the cocaine industry.

D. Ask students to write a paragraph expressing their opinion on the central question posed: Who is responsible for the problems caused by the cocaine industry and what can/should be done?

E. Ask students to write letters to their congressional representatives reflecting their understanding of the cocaine industry and recommending policy.

F. Use questions from the reading discussion guide as appropriate.

References:

Brooke, James. "Peru Suggests United States Rethink Eradication in Land Where Coca is Still King." *New York Times*, 18 November 1990.

Joyce, Bruce R. and Marsha Weil. *Models of Teaching*, 3rd ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc, 1986.

Palincsar, A.S. and A.L. Brown, "Reciprocal Teaching of Comprehension-Fostering and Monitoring Activities," *Cognition and Instruction*, 1984, no. 1:117-175.

HANDOUT 1

Roles

Professor Ron Gallimore, Ph.D., M.D.

You are a medical researcher/physician who has specialized in the study of nitrogenous organic salts such as cocaine that have a physiological effect on humans. You are being called as an expert witness on the history and use of cocaine in North America and Europe.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
What is the history of coca use in South America?
What is the history of cocaine use in Europe and North America?
When was its use most prevalent before the current fad?
Why did use curtail then?
What is the substance in coca that makes it a stimulant?

Sr. Demetrio Guevara

You are an Indian Bolivian, a descendent of the great Incan Empire. You live in a remote region of the Andes Mountains and work on a large estate as an agricultural laborer. You chew coca leaves every day; they are provided to you when you come to work in the morning much as American workers are provided coffee.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
How do you use coca? What is the actual procedure you follow?
How much do you chew?
How often?
Why do you chew coca leaves?
What effect does it have on you?
Is coca use common in your area?

Lt. Francisco Diaz

You are a policeman in the town of Uchiza in the Huallaga Valley of Peru, high in the rugged Andes Mountains, 38 hours distant from the capital of Peru, Lima. Coca is the most important crop of Uchiza. You have been a policeman in this town since 1975.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation? Describe your geographic location.
What is the primary crop grown in your town?
How has coca production changed your town? What special problems has the growth of the coca industry caused your town and you?
What do you do to try to stop this illicit activity?
Do you receive any money personally from the coca growers? (Remember you must tell the truth.)

Sr. Justo Silva

You are a coca farmer not far from Uchiza in the Huallaga Valley of Peru, high in the rugged Andes Mountains, 38 hours distant from the capital of Peru, Lima. Coca is the most important crop of Uchiza. You employ many other Indians and mestizos on your farm which has been in operation since 1983.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Why do you grow coca?
What environmental factors make growing coca easy and reasonable?
What other crops could you grow instead of coca?
Describe the process of how you raise coca from planting to harvest.
How many people work for you? Where do they come from?
Once your crop has been picked what do you do with the leaves?
How much money do you make?
How much of that must you spend in costs?
What is your relationship with the police of Uchiza?

Sr. Mario Delgado

You are a coca processor located near Uchiza in the Huallaga Valley of Peru, high in the rugged Andes Mountains, 38 hours distant from the capital of Peru, Lima. Coca is the most important crop of Uchiza. You turn the coca leaves into paste. You locate your operation close to the growing fields because moving the leaves before processing is bulky and awkward. It is much easier and cheaper to move the smaller volume of paste.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
What is the location of your operation?
Where is that in relation to the coca growing areas?
Why are you located where you are?
Describe the way you process coca leaves.
What are your two end-products?
How much value is added to the coca leaves by processing?
How is the paste transported and to where?

Sr. Marcos Lopez

You are the mayor of Uchiza in the Huallaga Valley of Peru, high in the rugged Andes Mountains, 38 hours distant from the capital of Peru, Lima. Coca is the most important crop of Uchiza. You are relatively new on the job; the last mayor was shot to death three months ago. You are 34 years old and grew up in Uchiza. Before you became mayor you operated an aircraft repair service at Uchiza's airport. Your primary clients were Colombians who transport the processed coca paste north to Colombia.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
What do most people do for a living in Uchiza? What did you used to do before becoming mayor? Who were your primary clients?
What has been the effect of this trade on the economy of your town?
Specifically, how has it affected pollution, the size of the population, job opportunities and the goods and services available in Uchiza?
What will be the impact on your town if United States policy is successful and coca growing is eliminated?

Sra. Miguelina Pena

You are a well-respected teacher in Uchiza in the Huallaga Valley of Peru, high in the rugged Andes Mountains, 38 hours distant from the capital of Peru, Lima. Coca is the most important crop of Uchiza. You grew up in Uchiza but were educated in the capital of Lima and worked there until five years ago. When you returned you were surprised to see your hometown had changed because of the coca industry. You work closely with the youth of Uchiza and are concerned about the effect the coca trade is having on them.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
What has been the effect of the coca trade on the young people of your region of Peru?
Do young Indians and mestizos use cocaine now?
How is it changing the traditional ways of life?
Once addicted, what do the young people do to support their habit?
If cocaine production were eradicated, what other economic opportunities would exist?

Sr. Raul Calderone

You are a cocaine refiner from Medellín, Colombia. You spend most of your time supervising your "factory/lab" located in a remote region of southeast Colombia accessible only by air. Your pilots fly in coca paste from the Huallaga Valley of Peru. When refined, it is flown out to a transshipment point and then to the United States. You have been in this business since you were a teen; you learned the trade helping your father who was involved in marijuana smuggling in the 1960s and 1970s.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Where is your cocaine refining lab located?
Why is Colombia a good location for this activity?
Why did you choose your specific location in southeastern Colombia as the best site for a cocaine refining lab?
Before being in the cocaine business what did you do?
How does the coca paste move to you?
Describe the process for refining cocaine paste.
When the cocaine leaves your lab how much is it worth? How much of that is profit?

Sr. Portencio Ramon

You are a highly placed member of a leading Colombian drug cartel. You live in luxury in Medellín but also have a condominium in the Bahamas, and a house in Bogota, the capital of Colombia, where you are a prominent citizen. Wherever you travel you do so with a bodyguard. You are testifying in this hearing without fear of prosecution or extradition by a prior arrangement.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Please describe how your organization is involved in the cocaine industry. What services do you offer specifically?
How does the cocaine move to the United States from Colombia? What is the route?
What is the value of the cocaine "on the street" in the United States?
What is the profit you make from its sale?
Where is the greatest share of the profit earned?
How is it that the Colombian government allows this illegal activity?

Sra. Lara Benitz Flora

You are a journalist with the largest newspaper in Colombia. Your husband, a district attorney in Bogota, was killed by a cocaine cartel for prosecuting cartel members. You have written courageously and honestly about the cocaine industry, analyzing it in both its positive and negative aspects.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Please tell us a little of your background that led you to research and write about the cocaine industry in Colombia.
How do the cartels maintain power in Colombia in you opinion?
Why are many of the people of Colombia supportive of the cartels? Of what benefit are the cartels to Colombia?

Mr. Rodney Nettleford

You are a native of Belize and an executive officer of the Organization of American States (OAS) in Washington D.C. You are an expert in policy-making and the illicit drug trade in the Western Hemisphere.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Summarize the attitude of the coca-producing nations of Peru, Colombia and Bolivia toward the cocaine trade.
What factors prevent the governments of these countries from taking action against the cocaine industry?
In your opinion what would be the long-term consequences of a coca eradication program?

Mr. Jimmy Walker

You are a cocaine user from Washington D.C. You were employed by the Social Security Administration as a claims processor after you graduated from high school, but lost that job as a result of your addiction to cocaine. You are currently serving a six-month sentence for burglary in the D.C. jail in Lorton, Virginia.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
When you were addicted to cocaine, how often did you use it?
What physical effect did your use of cocaine have on you? What effect did cocaine have on your personal life?

Mr. Darvin Reitman

You are an agent with the Drug Enforcement Agency (DEA). You have been stationed for several years in Peru with the United States government program to eradicate coca-leaf production in that country. Most recently you worked with a team of Peruvian and American anti-drug agents who use helicopters to destroy the coca processing labs and coca bush nurseries. This campaign, which has cost United States taxpayers millions of dollars, has only slowed crop expansion by 10 percent a year. You have become disillusioned because of a lack of success and see the best solutions in stopping demand in the United States and alternative economic development for the growing areas, not just crop substitution as some suggest.

Questions You May Be Asked:

What is your name, where do you live and what is your occupation?
Please describe United States policy toward coca production in South America.
Have United States efforts been successful in your estimation?
What will work?
Who do you think is responsible? What is the solution?
How supportive have Colombian officials been in trying to curtail processing and shipment of cocaine?

HANDOUT 2

CONGRESSIONAL INVESTIGATORS

POINTS THAT EACH WITNESS SHOULD MAKE:

Professor Ron Gallimore, Ph.D., M.D.

- Coca has been chewed in South America for over 7000 years. Its use is a traditional part of Indian and mestizo culture and is beneficial because it is a mild stimulant. It helps the inhabitants cope with a difficult physical environment.
- Coca was used in Europe before 1860 only rarely. When the process to produce cocaine was discovered, its use for a variety of medical ailments became common. At its height in the 1890s cocaine was used as a mild tonic in the United States and Europe. Common usage made cocaine's harmful nature apparent by the turn of the century. A combination of laws and a generally puritanical attitude discouraged its use by the 1930s.
- Cocaine became the drug of choice again the 1970s.
- Coca leaves contain alkaloids that have a physiological effect on humans.

Sr. Demetrio Guevara

- Indians mix coca leaves with lime and chew the mix. The result is mild stimulation with no long-lasting ill effects.
- The average Indian consumes about .03 grams of cocaine a day.
- It is commonly used every day in the morning to provide energy for a day's work.
- It produces a good feeling, gives one energy, overcomes the pangs of hunger and helps one to work at the very high elevations common in the Andes highlands.
- Coca chewing is as common as coffee drinking in our society; almost everyone does it. It is legal to chew coca leaves in the traditional manner.

Lt. Francisco Diaz

- Uchiza is the center of coca production in the Huallaga Valley, the center of coca production in South America. Uchiza is very remote and inaccessible, far from the control of the central government.
- Coca production has caused a change in the economic development of the region bringing new jobs, immigration, revenue, and societal change. It has brought the modern world to a backward and traditional region.
- It has brought many problems: the young people are addicted to "bazooka," and steal and become involved in prostitution and gambling to feed their habit. There is more crime than ever before. Pollution is worse in Uchiza.
- The police are paid by the coca industry NOT to stop it. They do nothing to curtail its activities.

Sr. Justo Silva

- Growing coca earns a farmer more than any other crop.
- Coca grows well on steep, dry hillsides where other crops will not. There has always been a local market for the crop. It grows rapidly, producing a cash crop in less than one year. Coca is disease and pest-resistant. It is ideally suited to the environment.
- After the land is cleared, the seedlings are planted. The crop must be weeded and requires intensive hand-labor. Workers are hired from as far away as the capital. A coca crop is ready in a short period of time, less than a year.
- The leaves are picked, dried, and then sold to a processor.
- The grower makes about 1 percent of the United States street value of the cocaine ($90,000/kilo) or about $900. From that he must pay workers, transport and other costs including bribes paid to the police and military.
- The growers pay the police bribes so they will be left alone.

Sr. Mario Delgado

- The coca processors are located close to the coca fields to minimize transport costs. The process reduces the volume of the coca by 99 percent.
- The process of "maceration" involves soaking the coca leaves in chemicals for five days.
- Two end products are high-quality coca paste which will go on for further refining and low-quality, lethal chicle or "bazooka," a cocaine that is smoked, similar to crack, in South America as well as the United States.
- The value of coca increases 400 percent with processing.

Sr. Marcos Lopez

- The majority of Uchiza's residents are either directly or indirectly involved in the coca industry. Even the mayor is involved servicing the airplanes that transport the cocaine paste to Colombia.
- The economy has changed from barter to cash. The cash-based consumer economy means people purchase expensive, manufactured goods brought in from other places. Uchiza is a boom town with bars, casinos, prostitution, drug addiction and many migrants from elsewhere. Crime and pollution have increased. The last mayor was shot.

Sra. Miguelina Pena

- The youth of the Andes highlands now reject their traditional way of life and embrace a "modern," fast-paced existence. Traditional values and morals have gone. A generation gap is tearing Indian and mestizo culture apart. Many are addicted to "bazooka" and are forced to crime to pay for their addiction. Their health has deteriorated; hundreds of thousands of young adolescents have died as a result.
- There is little hope for positive change because there are no other economic opportunities available.
- The cocaine industry is devastating South America as it is North America.

Sr. Raul Calderone

- The cocaine refining labs are located in inaccessible areas of Colombia, usually in the southeastern lowlands. This area is remote and far from governmental authority.
- The paste is flown in from Peru and other points south.
- Colombia is well-situated halfway between the United States mainland and the coca-producing areas of the Andes.
- The cocaine refiners have traditionally been involved in smuggling and illicit operations. With the advent of the demand for cocaine in the United States they refocused their activities to the endeavor.
- The paste is converted to cocaine hydrochloride through a chemical process that produces a product 90 percent pure.
- One pound of pure cocaine is produced from 2.5 pounds of paste. The one pound of cocaine is now worth $11,000. That is 18 times the cost of the coca leaves, four times the value of the paste. The profit is about 90 percent.

Sr. Portencio Ramon

- The Colombian cartels are wholesale distributors. They provide these services to the cocaine industry: marketing, political protection, chemical supplies needed in processing, laundering the profits and generally handling international aspects of the business.
- The cocaine moves to the United States usually by air in small, private planes, jumping from Colombia to midpoints in the Caribbean and Central America (Belize, Bahamas, Jamaica, Yucatan) and then to the southern United States: Florida, Texas, or anywhere along the Gulf Coast.
- Once in the United States it moves through middlemen to consumers. The value "on the street" is $90,000 a kilo or about $40,000 a pound, 12 times its value in Colombia. The cartel only receives about 10 percent of that. The greatest share of the profit is "earned, banked, and spent in the United States" (Gerlach 1992).
- The cartels use fear to control the government of Colombia. They also provide funding for many activities in Colombia which gain them popular support, such as zoos, sports events and housing construction for the poor.

Sra. Lara Benitz Flora

- Anyone opposing the Colombian cartels has faced a harsh penalty: death. The government is influenced by terror to tolerate the cartels; the judicial system is powerless. The cartels have so much wealth that they have literally bought the support of many Colombians.
- The common people of Colombia support the cartels because they show concern for the poor and downtrodden through their charitable acts. The cartels have brought wealth to Colombia.

Mr. Rodney Nettleford

- To the South American nations, coca is an economic issue, not one of drug abuse. The coca-producing nations cannot crack down on the illicit drug industry because it supports their economies. Peru and Bolivia are nearly bankrupt; cocaine is the leading money producer in both nations. An anti-cocaine policy would lead to increases in unemployment, inflation and anti-government guerrilla activity.
- The long-term consequence would be total economic and political disruption accompanied by a pro-communist, anti-United States revolution. This solution to the United States drug problem would lead to greater problems in South America.

Mr. Jimmy Walker

- Cocaine use in the United States is much different than coca chewing in South America. Cocaine use as practiced in this country results in dire physical and mental consequences, addiction, and can cause death.
- United States users consume 30 to 60 times that consumed by coca chewers in South America, 1 to 2 grams a day compared to .03 grams per day for a South American Indian.
- Cocaine use is illegal and socially unacceptable in the United States. In South America coca chewing is legal and an accepted cultural practice.

Mr. Darvin Reitman

- United States policy has been one of eradication of the coca fields, processing labs, etc. at the source in South America. The policy has involved military style intervention tactics, aerial spraying of coca fields and raids on labs.
- The policy has not been successful, only serving to keep the expansion of new fields to about 10 percent thus keeping prices high for those still in production. The South American authorities pay only lip service to the eradication program. Much of the trade is condoned and regulated by local police and military.
- Despite efforts, about 90 percent of all cocaine shipped from Colombia enters the United States without detection.
- Many DEA officials now think that only wholesale economic redevelopment in South America will create the conditions necessary to dissuade growers from continuing production. Crop substitution policies will not work.
- Coca production is expanding beyond South America to Central America, particularly Honduras and Guatemala. The problem is one of demand, not of production. The DEA has not been able to control production; it is time to look for new policies.

HANDOUT 3

INSTRUCTIONS TO SENATORS AND REPRESENTATIVES

You are a member of a joint House of Representatives/Senate Task Force investigating the drug industry in the Americas, specifically the Andean cocaine connection.

Please write you name here: ______________________________

The Situation:

It is clear that the United States' policy of eradication of cocaine production in Peru, Ecuador, Colombia, Brazil and Bolivia has failed. The policy has cost millions of dollars and has only caused bad relations with these countries; they are threatening to break diplomatic relations with the United States claiming that the drug industry is the United States' problem, not their problem.

The Action:

Congress has organized this task force to hold hearings to investigate the entire cocaine industry and to decide on future United States policy. You are to make recommendations in the form of a resolution to determine the best policy, not only to stop the flow of drugs to the United States but also to stop drug use in the United States.

During the hearing, Congressional Investigators will call a series of witnesses to give testimony about the cocaine industry. You will listen to the testimony and take notes summarizing the points each witness makes. As you listen, synthesize and evaluate testimony. You will need the information you hear to decide policy later. You may ask questions to clarify a point but generally should leave that to the Congressional Investigators.

Writing the Resolution:

Your work really begins with the end of the hearing when you write a resolution 1) summarizing your findings, and 2) recommending United States policy. Your teacher will give you specific details on how to format this. You may wish to consider these questions as you develop policy:

1. Has United States policy been effective?
2. Everyone agrees that cocaine usage is harmful and that the cocaine industry should be eradicated. Who should take responsibility, the United States (consumer) or the South American nations (producers)?

HANDOUT 4

PRE-POST TEST

1. Which of the following nations leads the world in commercial production of cocaine?

   a) Cuba; b) Colombia; c) Peru; d) Thailand

2. It is estimated that the United States consumes what percentage of all the cocaine produced in the world?

   a) 15 percent; b) 45 percent; c) 65 percent; d) 85 percent; e) 99 percent

3. Which nation first transported the coca leaf to Europe?

   a) United Kingdom; b) United States; c) Spain; d) Portugal; e) France

4. Most of the cocaine enters the United States from the:

   a) New England states; b) Gulf states; c) Pacific northwest states; d) states bordering Mexico

5. The majority of cocaine is transported via

   a) ship; b) plane; c) train; d) mules; e) automobiles

6. T or F Chewing coca leaves is relatively harmless.

7. T or F Coca leaf chewing is widely practiced in the United States.

8. T or F The production of coca leaves is a legal activity in some South American nations.

9. T or F Drug trafficking cartels grow, process, refine, transport and distribute cocaine.

10. T or F The cocaine user is responsible for the cocaine industry.

HANDOUT 5

Reading-Discussion Guide

Please answer the following questions as you read the essay "The Drug Industry in the Americas: The Andean Cocaine Connection."

1. Why is approximately 85 percent of the world's cocaine consumed in the United States?
2. What is the name of Peru's main coca growing zone?
3. Identify at least two factors that explain why Peru is the world's leading commercial coca producing nation.
4. Identify at least two reasons that explain why cocaine is snorted in the United States rather than chewed.
5. State the significance of the following statement: "Coca is as Andean as apple pie is American."
6. When was the coca leaf introduced to Europeans?
7. Which nation first transported the coca leaf to Europe?
8. Why did Sigmund Freud declare cocaine a "wonder drug" in 1884?
9. Why was there such a major increase in United States cocaine usage between 1962-1980?
10. Identify at least four factors that explain why coca is produced (instead of maize, rice, coffee, or tea) in the Andean region by approximately 125,000 growers.
11. How long does it take for a coca bush to reach maturity?
12. What is the productive life of a coca bush?
13. Why does the processing of coca leaves to coca paste occur near the coca fields?
14. One impact that the coca industry has had on many inhabitants in the eastern Andes has been the switch from a traditional barter economy to one based on cash. How has this altered the way of life for many people living in the Andean region?
15. What is "bazooka" and how does it affect those who smoke it?
16. Provide at least three reasons that explain why cocaine refining labs are located in Colombia.
17. Why have Colombian cocaine refiners relocated their operations from urban sites to rural areas?
18. Identify at least three functions served by cartels in the drug industry.
19. Please complete the following chart showing the steps that are taken in the production of cocaine. Part of the chart has been completed, your task is to fill in the missing steps.

    Step #1--slash and burn agriculture techniques
    Step #2--____________________________________
    Step #3--picking of coca leaves
    Step #4--____________________________________
    Step #5--processing coca leaves to coca paste
    Step #6--____________________________________
    Step #7--cocaine paste is refined to cocaine
    Step #8--____________________________________
    Step #9--distribution to user

20. Approximately what percentage of the street value of cocaine is received by the grower of the coca bush?
21. Identify at least three factors that inhibit Peru and Bolivia from establishing a tough anti-cocaine policy.
22. State the significance of the following statement: "What perpetuates the export cocaine industry and the illicit drug industry in general is demand, and so long as that remains high, someone somewhere will meet it."
23. How might the preceding statement have an impact upon the formulation of United States policy?
24. Do you agree with the preceding statement? Please offer an explanation.

ANSWERS TO READING-DISCUSSION GUIDE

1. Wealth of the nation's people, location, culture
2. Upper Huallaga Valley
3. Climate, soil, economic and political conditions
4. Wealth, cultural characteristics
5. Answers may vary, but should focus on the role of culture and resource usage.
6. 1530s
7. Spain
8. Because of its anesthetic properties and its use in the treatment of a wide range of maladies, with no ill effects
9. It was perceived as a gourmet drug, fewer risks than heroin, increasing standards of living.
10. Soil composition, minimal shipping costs, not susceptible to diseases and crop pests, little water is required, quick yields
11. 18 months
12. 30 years
13. Very little weight reduction occurs after coca paste is produced from coca leaves, paste production does not require the use of complex, technological and organizational structures.
14. Answers will vary, but should include the fact that a consumer economy has now developed in the Andean region.
15. Smoking cocaine, or a high quality coca paste also known as *chicle.*
16. Coaine yields a high profit; it is close to where coca is grown; and close enough to where it can easily be transported throughout the United States and Europe.
17. Processing the crop reduces its weight by 99 percent.

19. Chart

    Step #1--slash and burn agriculture
    Step #2--purchase and planting of coca seedlings
    Step #3--picking coca leaves
    Step #4--coca leaves are sold to processor
    Step #5--processing of coca leaves to coca paste
    Step #6--transporting of coca paste to Colombia
    Step #7--cocaine paste is refined to cocaine
    Step #8--transportation to foreign markets
    Step #9--distribution to user

20. Less than 1 percent
21. 1) Economic implications, loss of revenue; 2) Social problems, increased unemployment, inflation; 3) Instability might result, guerilla activity

22.-24. Answers will vary.

A Planter's Day*

by John G. Stedman

Editor's Note: *The seventeenth and early eighteenth centuries were boom times in the Caribbean, the time when sugar was king. Europeans who were lucky enough to have the land, the location, and the labor to produce sugar for export to hungry European markets could accumulate great wealth. "As rich as a West Indian planter" became the yardstick for success in business. The successful planters took advantage of their wealth to redefine leisure, requiring their slaves to serve not only the estate but them personally. As the following description of a planter's day describes, life was good for the planter but very poor for the slave. Today the planters are gone but the slaves' descendants people the Caribbean. As you read this essay, consider who you would rather be, the master or the slave.*

---Tom L. Martinson
Auburn, AL

A planter in Surinam, when he lives on his estate (which is but seldom, as they mostly prefer the society of Paramaribo [the capital]), gets out of his hammock with the rising sun, viz. about six o'clock in the morning, when he makes his appearance under the piazza of his house; where his coffee is ready waiting for him, which he generally takes with his pipe, instead of toast and butter; and there he is attended by half a dozen of the finest young slaves, both male and female, of the plantation, to serve him; at this sanctum-sanctorum he is next accosted by his overseer, who regularly every morning attends at his levee, and having made his bows at several yards distance, with the most profound respect informs his Greatness what work was done the day before; what negroes deserted, died, fell sick, recovered, were bought or born; and, above all things, which of them neglected their work, affected sickness, or had been drunk or absent, &c.: the prisoners are generally present, being secured by the negro-drivers, and instantly tied up to the beams of the piazza, or a tree, without so much as being heard in their own defence; when the flogging begins, with men, women, or children, without exception. The instruments of torture on these occasions are long hempen whips, that cut round at every lash, and crack like pistol-shot; during which they alternately repeat, "Dankee, massera" (Thank you, master). In the meantime he stalks up and down with his overseer, affecting not so much as to hear their cries, till they are sufficiently mangled, when they are untied, and ordered to return to their work, without so much as a dressing.

This ceremony being over, the dressy negro (a black surgeon) comes to make his report; who being dismissed with a hearty curse, for allowing any slaves to be sick, next makes her appearance a superannuated matron, with all the young negro children of the estate, over whom she is governess; these, being clean washed in the river, clap their hands, and cheer in chorus, when they are sent away to breakfast on a large platter of rice and plantains;

This essay was originally titled "Narrative, of a Five Year's Expedition, Against the Revolted Negroes of Surinam, in Guiana, on the Wild Coast of South America; from the year 1772 to 1777: Elucidating the History of That Country, and Describing Its Productions," 2 vols. by John G. Stedman. London: J. Johnson, 1806:56-61.

and the levee ends with a low bow from the overseer, as it begun.

His worship now saunters out in his morning dress, which consists of a pair of the finest Holland trowsers (sic), white silk stockings, and red or yellow Morocco slippers; the neck of his shirt open, and nothing over it, a loose flowing night-gown of the finest India chintz excepted. On his head is a cotton night-cap as thin as a cobweb, and over that an enormous beaver hat, that protects his meager visage from the sun, which is already the colour of mahogany, while this whole carcass seldom weighs above eight or ten stone, being generally exhausted by the climate and dissipation. To give a more complete idea of this fine gentleman, I...present him to the reader with a pipe in his mouth, which almost every where accompanies him, and receiving a glass of Madeira wine and water, from a female quadroon slave, to refresh him during his walk.

Having loitered about his estate, or sometimes ridden on horseback to his fields, to view his increasing stores, he returns about eight o'clock, when, if he goes abroad, he dresses, but if not, remains just as he is. Should the first take place, having only exchanged his trowsers (sic) for a pair of thin linen or silk breeches, he sits down, and holding out one foot after the other, like a horse going to be shod, a negro boy puts on his stockings and shoes, which he also buckles, while another dresses his hair, his wig, or shaves his chin, and a third is fanning him to keep off the mosquitoes. Having now shifted, he puts on a thin coat and waistcoat, all white; when under an umbrella, carried by a black boy, he is conducted to his barge, which is in waiting for him with six or eight oars, well provided with fruit, wine, water, and tobacco, by his overseer, who no sooner has seen him depart, than he resumes the command with all the usual insolence of office, but should this prince not mean to stir from his estate, he goes to breakfast about ten o'clock, for which a table is spread in the large hall, provided with a bacon ham, hung-beef, fowls, or pigeons broiled; plantains and sweet cassavas roasted; bread, butter, cheese, &c. with which he drinks strong beer, and a glass of Madeira, Rhenish, or Mozell wine, while the cringing overseer sits at the farther end, keeping his proper distance, both being served by the most beautiful slaves that can be selected; and this is called breaking the poor gentleman's fast.

After this he takes a book, plays at chess or billiards, entertains himself with music, &c. till the heat of the day forces him to return into his cotton hammock to enjoy his meridian nap, which he could no more dispense with than a Spaniard with his siesta, and in which he rocks to and fro, like a performer on the slack-rope, till he falls asleep, without either bed or covering; and during which time he is fanned by a couple of his black attendants, to keep him cool, &c.

About three o'clock he awakes by natural instinct, when having washed and perfumed himself, he sits down to dinner, attended as at breakfast by his deputy governor and sable pages, where nothing is wanting that the world can afford in a western climate, of meat, fowls, venison, fish, vegetables, fruits, &c. and the most exquisite wines are often squandered in profusion; after this a cup of strong coffee and a liqueur finish the repast. At six o'clock he is again waited on by his overseer, attended as in the morning by negro-drivers and prisoners, when the flogging once more having continued for some time, and the necessary orders being given for the next day's work, the assembly is dismissed, and the evening spent with weak punch, sangaree, cards and tobacco. His worship generally begins to yawn about ten or eleven o'clock, when he withdraws, and is undressed by his sooty pages. He then retires to rest, where he passes the night in the arms of one or other of his sable sultanas (for he always keeps a seraglio) till about six in the morning, when he again repairs to his piazza walk, where his pipe and coffee are waiting for him; and where, with the rising sun, he begins his round of dissipation, like a petty monarch, as capricious as he is despotic and despicable.

As for the ladies, they indulge themselves just as much, by giving way to their unbounded passions, especially to the most relentless barbarity. But while I can bear witness to the exalted virtues of such a woman as Mrs. Elizabeth Danforth, now Mrs. Godefrooy, and a few more whose characters shine with treble lustre, I shall draw a veil over all the imperfections, too common to their sex in this climate. Before I drop this subject, however, I must attest, that hospitality is in no country practiced with greater cordiality or with less ceremony, a stranger being every where at home, and finding his table and his bed at whatever estate necessity or choice may occasion him to visit. This is the more to be regarded, as no inns are to be met with in the neighborhood of any of the Surinam rivers.

Owning Slaves In Caribbean Colonial Plantation Culture: A Learning Activity To Accompany *A Planter's Day*

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Introduction:

The Caribbean colonial plantation and the culture of the planter class emerged in the late seventeenth century and was in decline by the late nineteenth century. Sugar cane was the central and most lucrative crop for most of the plantations but other crops such as indigo, tobacco, cacao and tropical fruits were grown for limited times and in areas where sugar cane did not flourish. The plantation was designed to supply European markets with cane sugar and other tropical products. It reached its maximum development in the eighteenth century, it created temporary spectacular wealth over which Europeans fought numerous wars, and it made impossible the development of a European population of farmers and tradespersons as the plantation system served as a vehicle for importing large numbers of African slaves. The colonial plantation became the major determinant of the racial composition, population patterns and the class structure of present-day Caribbean societies. The following learning activity will help students better understand the lifestyles of the planter and the role of the slaves on the colonial plantation, and ultimately the student will gain an appreciation of the notion of the "social construction of space."

This activity is based upon the reading of a short essay entitled, "A Planter's Day," by John G. Stedman. Mr. Stedman visited Suriname in 1772 as part of a task force to put down a slave rebellion. During the course of his stay Mr. Stedman made many observations regarding the plantation lifestyle and this particular essay emphasizes the planter's daily life at the plantation. Mr. Stedman developed an empathy for the harsh existence of the slaves and his portrayal of the planter reveals the great potential for casual sadism and mistreatment of slaves by the owning class. Although this essay describes a Suriname plantation it is representative of plantations throughout the Caribbean basin and the Caribbean style societies of South American (Guyana, Suriname and French Guiana).

Grade Level:

Students of grade levels 9 and 10 are targeted for this project, but the lesson can be adapted to higher grade levels.

Time Required:

This program is designed for two or three weeks (10 to 15 class periods) and it can be adapted to fit a longer time frame.

Key Geographic Theme: Place

Key Concepts:

Personal space, sense of place, sphere of influence, social hierarchy/spatial distance, slavery, bonded labor (indenture, redemptioned), mercantilism, plantation, planter class and absentee landlords

Objectives: Learning outcomes include:

Knowledge:

A. Understanding the colonial plantation as a cultural and economic institution

B. Understanding the concept of place in regards to the role of the colonial plantation in giving the Caribbean region its historical character

C. Understanding the relationship between holding power and the control of space and territory

D. Understanding sense of place at the macro-level; i.e. one's sense of the Caribbean region and its cultural and historical character is ultimately influenced by the colonial plantation phenomenon

E. Understanding sense of place at the micro-level; i.e. knowing "one's place," physically as location (I can move freely in the slave quarters but not in the planter's house or I can go wherever I please) and socially in the class hierarchy (I am at the bottom of the pile or I am at the top of the pile) and behaving in accordance with that place

F. Understanding the role of place and space as a socially constructed phenomena in one's personal experience and as a pattern for a society

G. Understanding the planter's experience on the colonial plantation of the 18th century Caribbean as the spatial context of power over people and resources

H. Understanding that the United States Constitution is a document that symbolizes the right to self-determination and a document that should protect all individuals of the state from the potential excesses and abuses that the wealth, status and power of a certain class of people can inflict on other individuals of that society or any society

Skills:

A. Distinguishing between geographic and non-geographic information

B. Finding relevant places on maps or in atlases

C. Reading comprehension (especially using primary source materials)

D. Making connections between the experiences of people in another time and place and one's own experiences

E. Interpreting relevant data

F. Communication skills, both oral and verbal

Attitudes and Values:

A. Openness towards learning about new and different circumstances of people from a different time and place

B. Appreciating the role of power, status and wealth in regards to one's personal experience of space and 'knowing one's place'

C. Valuing the basic human right of freedom of movement and self-determination

D. Recognizing that wealth and status do not naturally confer the right to own or otherwise control the movement, habitation or self-determination of another individual

Materials:

1. Outline maps of the western hemisphere (class set)
2. Outline maps of the Caribbean region (class set)
3. Atlases which depict the western hemisphere and the Caribbean region in detail.
4. Access to library resources on: a) slavery, the institution of African slavery and the slave trade, b) Caribbean history, culture, and society, c) information on the colonial plantation, its development and decline, its role in population transformation and its impact on the present character of the Caribbean region, d) information on place and space as personal experience and as patterns of social construction, and e) information on the tropical character of the Caribbean region.
5. The reading entitled, "A Planter's Day," by John G. Stedman
6. Cardboard, various colored markers, black cloth, scissors, rulers, umbrella, one large palm frond (or reasonable facsimile) and any other materials that would enhance a dramatic production.

The Learning Activity

Background:

The following definitions will be useful for students reading the essay. They represent only those meanings relevant to this particular reading.

1. **cassava:** a tropical shrub or plant belonging to the genus Manihot, producing large thick roots from which an edible starch is obtained; also called manioc; the edible starch is used to make tapioca and bread.
2. **chintz:** a cotton cloth printed with flowers and other patterns in a number of different colors and usually glazed.
3. **clandestinely:** secretly; privately.
4. **dissipation:** to expand or squander physical or mental powers in wasteful extravagance; to gratify one's senses and to waste one's time and energy on frivolities; to indulge to the point of harming oneself.
5. **hammock:** a hanging bed consisting of a piece of canvas or netting to be made of hemp, an Asiatic plant whose fibers are used to make rope.
6. **levee:** a morning reception held by a sovereign or person of high rank when rising from bed.
7. **matron:** a woman attendant or guard in charge of other women or children.
8. **meridian:** reference to the midday.
9. **overseer:** one who watches over and directs the work of others; supervisor.
10. **piazza:** a large covered porch; a veranda; because many Caribbean homes are built on stilts or posts this porch would extend from the front door which would be about 8 to 10 feet above the ground; the porch would have its own posts and a stair leading to the ground.
11. **pillage:** to deprive of money or property by violent means.
12. **plantain:** a plant (*Musa paradisicaca*) closely related to the banana; the fruit is larger and more angular; it is extensively cultivated throughout the tropics; the fruit is usually eaten cooked before ripe-its texture and character being like a potato.

13. **quaderoon:** now spelled quadroon; the offspring of a mulatto and a white; a person who has one Black grandparent.
14. **sable:** black or dark in color (as in the dark coloring of the animal known as a sable).
15. **sanctum-sanctorum:** a most holy place; a place of utmost privacy-sometimes used humorously or sarcastically (as in this essay).
16. **sangaree:** a drink composed of wine and water sweetened, spiced and iced.
17. **seraglio:** a Turkish harem where the sultan or king keeps his wives or mistresses.
18. **stone:** in the British weight system, 14 pounds.
19. **sultana:** usually the mother, wife or daughter of a sultan (a Turkish king), but used in English to refer to a mistress of a king, prince or important person.
20. **superannuated:** old, worn, or outdated; old fashioned-worn out.
21. **visage:** the appearance (or countenance) of the face.

The following place names are used in the reading and should be studied by the students: Suriname, Paramaribo, Holland (the Netherlands), India, Morocco, Madeira (Portugal), Rhenish and Mozell (regions in Germany). These places are indicative of the trade and colonial connections during the era under study.

The Caribbean culture area (especially during the colonial period) can be said to extend from the countries of Suriname, Guyana, French Guiana (called the Guianas and known as Dutch Guiana, British Guiana and French Guiana at the time) to all of the islands within and bounding the Caribbean Sea to the eastern margins of the Central American nations of Panama to Honduras and including the entire nation of Belize (British Honduras at the time) and through the eastern margins of the Yucatan Peninsula of Mexico and including some coastal areas of the Gulf of Mexico from Mexico to the United States.

Other place names to study might include the above mentioned places within the culture area. Specific places for study will be selected by the teacher or students depending on their particular foci in expanded lessons.

Learning Strategies:

Lessons

1. Introduce the Caribbean region to the class in terms of location, natural characteristics, population settlement, history and the colonial plantation. Atlas and map work will be necessary here. Students may work individually or in groups with their outline maps in order to become familiar with the place names of the region. Make sure the students realize the influence of the colonial plantation on the character of the area. (Two class periods are enough time to give students an adequate overview of the region but an extended unit on the region would require much more time on this material)

2. Explain the concepts of slavery and social class. Discuss the implications of each on one's own personal daily life. Then explain the notions of 'personal space' and 'knowing one's place' in social terms. Have students discuss this phenomena in relation to their own personal experience. (One class)

3. Give the students a list of the definitions provided above and the short reading by John Stedman. Have them read the paper on their own and have them write an essay about it. That is, they should summarize the reading, interpret the author's intent and relate this to what they learned in the previous lessons. This essay will serve as the starting point for a discussion of the role of the planter in colonial plantation society of the Caribbean, the daily experience of some planters and the daily experience of the slaves (which can be extrapolated from the reading). The purpose of the discussion (in small groups or the class as a whole) is to feel out personal reactions to the piece and to help students understand the implications of the practice of slave owning for the owners as well as for the slaves in daily life. This daily cycle and human interaction have a

spatial context which, when studied, helps us to understand the larger picture of social class systems, dominance and the role of wealth and status in controlling or being controlled by the people around us. (Two to four class periods.)

4. Now the students are ready to dramatize the events in the reading. Students can make this project as simple or as elaborate as time and resources allow. They can work in smaller groups or as an entire class. The teacher can act as director and guide. Students need to write a script, cast the parts from classroom members, create and build the props and then act out the script. Other classes may be invited to be the audience. The script and acting should exemplify the notions of 'personal space' and 'knowing one's place' in regards to social class, slave status and planter status. Note in the reading that the overseer makes his bows at several yards distant from the planter but the flogging of the slaves is closer, at or under the piazza itself, and also note the amount of space at the disposal of the planter for all of his daily activities. (Five to ten class periods depending upon the elaborateness of the dramatization)

5. Have the students write an essay about the availability of personal space they have easy access to and if they notice or are aware of any distance or spatial restrictions in their social or family relationships. Students should then compare their situations today to those of the planter and/or slaves of Caribbean colonial society. Discuss in class. (One to two classes)

Conclusion:

Tie together the various levels and types of material presented throughout the lesson activities. Emphasize the spatial and social connections between one's personal experience, one's community, one's nation, and then the hemisphere.

Evaluative Methods:

The production of maps, writing essays, developing the group dramatization, and participating in class discussion give the teacher numerous opportunities to evaluate student performance in a manner consistent with the school's grading system. If the teacher feels it is necessary, an exam may be prepared. Otherwise, both qualitative and quantitative evaluation is possible throughout the course of the project.

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Use an encyclopedia for more information on the Caribbean, the colonial plantation and the notions of social/personal space.

Alternative Strategies: Team teach with the English/Drama class.

Enrichment Strategies:

Visit a museum with displays on Caribbean life and the life of planters and slaves during the colonial period. Invite a local historian, geographer, or other social scientist who has visited and studied the Caribbean to visit the class and give a slide presentation. Have interested students create a model of a Caribbean plantation with wood, plaster of paris, cardboard or any other material. Use pictures to recreate the plantation more authentically.

III. Human Needs and the Political Order

Engendering The Discovery of The New World

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The discovery of the New World has been envisioned as inherently masculine with men exploring the wilderness, overcoming savage animals and subduing alien peoples. Yet, from the beginning, women were there as well, as wives, mistresses, mothers, daughters, servants and slaves. Their activities were, however, rarely recorded and they remained largely invisible until recent research rescued them from archival oblivion.

Women were seen as genteel civilizers, reluctant pioneers who gently and passively brought civilization to the frontier while their men were taming the wilderness (Armitage and Jameson 1986). Much of this view has come from Victorian prescriptive literature. In reality, women immigrants to the Americas often sought personal freedom and new social roles. Throughout the centuries they have fought for personal independence and economic autonomy, resisted male power structures and created new patterns of gender relations. This essay is an exploration of how the social flux of the frontier of settlement has provided opportunities for innovation in gender roles at different periods and in different places within the Americas.

The Spanish Settlement Frontier

The Caribbean is the oldest colonial area in the world with European influence dating back to the first planting of the Spanish flag in the Bahamas by Columbus. The indigenous Amerindian populations were virtually exterminated by European settlers and small scale subsistence agriculture was replaced by the archetypal sugar plantation. A plantocracy from several European nations created some of the most profitable and advanced industrial enterprises of the seventeenth and eighteenth century western world on the backs of slave labor brought from Africa and of indentured workers from India, Indonesia and elsewhere. Hart (1989) identifies the region as a precocious experiment in social engineering and one of the major crucibles of the social forms that are evolving worldwide in the face of modern conditions.

Within the regional diversity of race, class, language and religion there is a unity of patriarchy. Yet there is also a strong tradition of female economic autonomy, of female-headed households and of a family structure in which men are often marginal. Gender relations are a double paradox of patriarchy within a system of matrifocal and matrilocal families and of domestic ideology co-existing with the economic independence of women. The roots of this contemporary paradoxical situation lie in colonialism.

In 1498 Queen Isabella of Spain granted a license allowing 30 women to join Columbus on his third voyage to the New World. These women made up 10 percent of the expedition and had to promise to settle in the new colony of Hispañiola. This marked the beginning of European female migration to the Americas and the pattern established in the islands was continued on the mainland. Married men were under legal and social pressure to take their wives with them to the New World and on most immigrant ships one tenth of the passengers were women. The high mortality rate of men in the violent frontier society of sixteenth century Latin America meant that the resident proportion of women in the colonial population was considerably higher.

During the first part of the sixteenth century, while Francisco Pizarro was conquering the Incas, women went to the Americas to find husbands and begin a new life. Although the Spanish conquest of Peru has been regarded as an all-male endeavor, Martin (1983) has shown that from the beginning women played a significant role in bringing Spanish culture to Latin America and many achieved a degree of personal freedom unknown in the Old World. They became wealthy in their own right and led protests against both Church and State, wielding influence far greater than their mere numbers would suggest.

> While men fought for power and wealth, the early Spanish women of Peru introduced European plants, crops and home industries; taught the Spanish way of life to the first generation of Spanish children born in Peru; played a dominant role in the acculturation of Indian servant girls and black slaves; raised many mestizo children; opened domestic businesses; and even became heads and rulers of powerful encomiendas. (Martin 1983, 13).

One of the most powerful of these encomenderas was Doña Beatriz Ysasaga, daughter of the last emperor of the Incas, Atahaulpa, who was executed by Pizarro.

As colonial society became established, the Spanish Crown sought to reassert the tradition of machismo and marianismo and to undermine the economic autonomy of women. In response to threats of forced marriages, both rich and poor women sought refuge in nunneries in seventeenth and eighteenth century New Spain. Mysticism became accepted by the Church as a form of knowledge in which women were particularly adept but by subordinating women on the grounds of their lesser rationality and relegating them to the domain of feeling, the clergy unwittingly created a space for female empowerment (Franco 1989). The inhabitants of the convents resisted the best efforts of civil and ecclesiastical authorities to enforce monastic reforms. Many of the larger convents of Peru became refuges for some of the best educated and most powerful women where they were able to retain control of their properties, live in worldly comfort and enjoy greater freedom and autonomy than their sisters in the secular city. No wonder they have been called "chaotic republics of women" (Martin 1983, 202) where women were able to maintain their independence despite male dominance of the colonial power structure.

Gender Relations Under Slavery and Indenture in the Caribbean

The pattern of female independence and rebellion against authority among the elite reported from colonial Peru can also be seen in the subaltern classes of forced migrants to the British Caribbean. The transhipment of Africans under slavery and the later bonded or indentured migration of Asian workers offered women, for a time, unplanned freedom from the patriarchal control of individual men. Instead they were, like men, subordinated to the dictates of capital and the ruling class. Women slaves were seen as equal to men in the eyes of the master as long as they worked as hard and were of equal strength (Patterson 1967) and women were often leaders in slave rebellions (Mair 1974).

Most women migrants came to the Caribbean to be plantation workers not housewives, as field workers not household servants, and their labor contributed to the development of European industrial capitalism. They resisted contributing to the reproduction of the labor force by maintaining a birthrate much lower than that found among slaves on plantations in the southern United States. These experiences bestowed on Caribbean women a degree of social and economic independence that subsequent colonial and neo-colonial agencies such as the Church and the education system successfully sought to destroy.

In the nineteenth century, slavery was abolished and women were taught that marriage was both prestigious and morally superior. Yet many women continued to resist it for fear of violence within marriage or of losing parental rights as well as because of a preference for economic autonomy. Single women in towns were arrested for unbecoming behavior and many were punished for involvement in the anti-colonial struggles of the early twentieth century (Rodney 1981). Despite these pressures women's participation in the labor force continued to be very high, increasing from 57 percent to 61 percent between 1891 and 1921 (Massiah 1986) as large-scale male migration occurred. This societal conflict is reflected in ambivalent attitudes toward women workers, for "while the planters criticized mothers for neglecting their offspring, they preferred to hire females, whom they considered more regular than males in their work habits" (Levy 1980, 113).

In Trinidad, planters sought to bring only male indentured workers from India but the colonial government insisted on including a small proportion of female workers on the grounds that this would prevent immoral behavior and prostitution (Tikasingh 1973). The contradiction between the planter's short-term preference for adult male laborers and their long-term need for a self-reproducing cheap and plentiful labor force illustrates the paradoxes inherent in the perceptions of women's role in Caribbean society. Both Reddock (1985) and Emmer (1986) have shown for Trinidad and Suriname respectively, that the women who left India to work in the Caribbean were more independent than most of their compatriots. Indenture was an escape route for Brahmin widows and child-widows, offering the opportunity for both remarriage and personal economic improvement.

Only about one-third of the women who arrived from India were accompanied by husbands. Indian women indentured workers did not easily accept the prevailing male orthodoxy of the colonial view of women as "housewives" or the Indian insistence on the seclusion of women of higher castes. The supply constraints on Indian women enabled them to resist the subordination of traditional arranged marriages and to develop autonomy over their own lives. In 1880 in Trinidad Indian men, with the help of Presbyterian ministers, petitioned the colonial government to control the mobility of women and force them to return to their husbands. In this way Church and State combined to reconstruct the Indian patriarchal family. The feminist movement emerging in the Caribbean today is seen by Rhoda Reddock (1990) as rooted in this long tradition of resistance to oppression and struggle for individual and collective autonomy.

A further paradox is that the contemporary patriarchy of Caribbean societies is often a patriarchy in absentia. This arises as a consequence of gender specific patterns of social behavior and of migration which has become institutionalized in the region (Richardson 1983). The plantation workers torn from their native African communities created a population which, after emancipation, formed an international diaspora of migrants and settlers. At first this involved predominantly male migrants but after the Second World War both sexes migrated, separately and in families. The women who went to North America and Britain were often forced to leave their children behind in the care of grandmothers.

Today every Caribbean territory is linked by complex movements of people, goods, money and information to settler communities in the industrialized countries of the north. Through this diaspora the influence of Caribbean social forms has spread widely. Although Caribbean nations may be tiny in world terms, their peoples have cosmopolitan attitudes with spatial perceptions which extend their territorial boundaries to disjunct corners of New York, London, Amsterdam, Paris and Toronto.

Gender and Frontier Settlement in Canada

The experiences of immigrant women in the late nineteenth century on the western Canadian frontier have many similarities with those of their sisters further south. In these newly settled regions the rigid separation of public and domestic spheres along gender lines which existed in Victorian Britain was no longer possible. Pioneer women in western Canada were involved in many occupations and an individual was not fixed in a particular economic role. One of the first coal mines was financed by a woman shopkeeper and run by her son, and there is even one remarkable woman who was recorded as farming and mining in her own right. "You know we were farming and mining at the same time. I never thought anything about a woman working. I liked outside better than I did in[side]. We tried everything you know, but that mining I really enjoyed." (Mrs. Dolly Gregory, Coal Tyee, 1979).

In the British census of 1851 it was found that, after a long period during which the Napoleonic Wars and sex-specific emigration had removed many young men from the population, the nation had 650,000 more women than men. A decade later the surplus of women had risen to 800,000. At the same time the population of Canada was overwhelmingly male and so British women were specifically encouraged to emigrate. In 1856 the Colonial Land and Emigration Commissioners stated that,

> Obvious as it is, it is not always kept in mind that for the permanent growth of a colonial population every single man who is sent out in excess of the number of single women is absolutely useless.

Thus for a number of years the Commissioners made a practice of sending to the Colonies two females for every male who received assistance from them.

Yet the financial independence of women was not encouraged by the Canadian government. Official policy defined immigration and settlement as a male project in which women were seen merely as factors of production and reproduction (Juteau-Lee and Roberts 1981). Free land grants to homesteaders were confined to men and widows. Women journalists in western Canada led the pre-First World War fight to persuade the federal government to offer free land grants to unmarried women. In 1914 Georgina Binnie-Clark recorded that, despite the lobbying, the interior Minister in the Liberal Cabinet,

> arrived at a decision to refuse to recommend the expansion of the homestead law in order to permit women to homestead because he considered it would be against the main interest of the country. He argued that the object of granting the land-gift to men is to induce them to make a home on the prairie - home in the centre of their agricultural pursuit. He held the first requirement of the genuine home-maker to be a wife: he marries, has a family, etc. etc. Women, he assumes, are already averse to marriage, and he considered that to admit them to the opportunities of the land-grant would be to make them more independent of marriage than ever. The reason was at least flattering to the Woman-Farmer if it was unpromising for the race. (Binnie-Clark 1914)

Despite official attempts to confine even single women to the domestic sphere, the large-scale sponsored emigration of women directly from Britain to western Canada distinguishes the settlement of this area from frontier settlement south of the border.

Women settlers had to cope with their reproductive tasks in a strange environment. The prime cause of discontent among women was isolation which would affect most severely those from densely-populated, urban environments such as Britain. The checkerboard settlement pattern of the prairies, where often you could not even see your neighbor's house, accentuated the loneliness of the homesteader. Lack of female company and the absence of husbands for weeks at a time, hunting, logging or in paid employment elsewhere, especially in winter, made the isolation of prairie life even more difficult for women.Some found compensation in the stimulus of the new environment. Mrs. M. M. Drury came from Sutton in Surrey to farm near Rapid City, Manitoba, in 1880 and despite her lack of experience was very appreciative of both the aesthetic and material qualities of the landscape.

> It is undoubtedly a great change to those leaving town life but the beauty of the scenery, bright sunshine, variety of birds and animals added to the prospect of a home you can call your own; form a pleasing novelty. I have gone through all the phases of pioneer life in a tent, both in the heat of summer and early snow in the fall, yet have gained health and strength, never meeting with any interruption from either human being or animal, although often left with only my two young children, [with] no house nearer than 1 1/4 miles. There is much a woman can do when the male portion is at work in the fields; gardening is pleasant and profitable work, also saving money. (Begg 1885)

Many of the women settlers complained of the heavy burden of domestic labor caused by poor living conditions. As one reported in the Begg questionnaires, 'I think the year in the North West is equal to two in old Canada as regards wear and tear on one's constitution.' In general, women found life in western Canada at the end of the nineteenth century much harder than did men. This was not because women were less enterprising than men but because migration took place for many of them at a time in their lives when they had to cope with the physical problems of childbirth and childrearing. In addition, they were expected to take full responsibility for the domestic sphere while providing considerable assistance on the farm, plus hunting game, collecting wild fruit and berries and assisting the family budget by producing items such as butter for sale. If they were left as widows, or their husbands sought work away from home, women had to act as head of household and provide for their children. However, many women rose to the challenge of the frontier. Mrs. M. Lowe, who left a farm in Ontario for Manitoba in 1873, raised five children in the west and reported that "most clever girls can do better here than men" (Begg

1885). She was not alone in discovering the beginning of a feminist consciousness through her success as a migrant.

Contemporary frontier settlement in the tropical rainforest of the interior lowlands of Latin America yields similar responses. Meertens (1992) reports that a woman colonist in Colombia's tropical forest east of the Andes stated in the 1980s that

> When we staked out this land the whole family had to cut down the mountain, clear out the timber and the weeds, plant rice, corn and plantain, then help harvest, layout pasture, build fences and raise cattle. It did not matter if we were women. Sundays were destined for laundry, cutting firewood, shelling rice and getting food.

These peasant women now feel that this initial labor input has given them status in their husband's eyes and their contribution to family well-being is more appreciated than before the settlement process.

Conclusion

Migration to the frontier demands much more of women than traditional social mores prescribe. In migration women are expected to preserve the family culture and, at the same time, learn new forms of housekeeping and display self-sufficiency in a strange land far from their normal support networks of family and friends. It is perhaps not surprising that among these women should be some who become active in seeking new rights for women. Male appreciation of the vital contribution of women to the settlement of the frontier, in the case of western Canada, allowed women to win the vote there before their sisters in eastern Canada and Britain, just as frontierswomen in the American West had been the first to be enfranchised south of the border.

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Rural To Urban Migration In The Americas: A Learning Activity To Accompany *Engendering The Discovery Of The New World*

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Introduction:

Migration and urbanization are exploding dynamics that cut across almost all geographical themes. Students need a strong grasp of this shifting scene. This learning activity is designed to strengthen students' understanding of these patterns through self-collected data, analysis of available statistical information and discussion of migration trends and ramifications, along with case study glimpses of women's roles in these patterns.

Grade Level: 9th through 12th grade

Time Required: Two class periods for the basic plan. Enrichment activities require additional time.

Themes/Key Ideas:

A. Movement

B. Humans interacting on the earth

C. Patterns are formed by the movement of people

D. Movement occurs for a variety of reasons.

Concepts: Migration, urbanization, push-pull factors

Objectives:

Knowledge:

A. To develop an awareness of migration patterns

B. To explore reasons for migration patterns

C. To become aware of possible ramifications of these patterns

Skills:

A. Acquiring geographic information

B. Acquiring data about peoples' geographic activities and the human characteristics of place through interviewing and obtaining statistical data from reference sources

C. Analyzing geographic information

D. Translating tabular and graphic information to verbal form, as in describing trends

E. Developing and testing geographic generalizations. Using inductive and deductive reasoning to analyze geographic information, patterns and generalizations

Attitudes and Values:

A. Analysis of migration situations in terms of problems facing persons and/or groups and the implied values represented by these problems.

B. Examining the rationale for migration decisions in terms of reasons for the chosen alternative.

Materials:

A. Copies of Rural-Urban Data Sheet for each student (Handout 1)

B. Current copies of a *United States Statistical Abstract* and a world almanac

C. Outline map of the United States showing individual states

D. Outline map of the Western Hemisphere showing individual countries

E. Atlases

F. Colored pencils

G. Calculator

H. Migration Chart--individual copies or an overhead transparency (Handout 2)

Background:

An examination of human-environment interaction leads to a close look at populations. These populations do not remain static but are in constantly shifting patterns. One of the shifting patterns is migration, the permanent move to a different area. People migrate for a wide variety of reasons. Forces that encourage persons to leave are called push factors. Forces that draw persons to a new area are pull factors. These push and pull factors are highly complex. According to Jordan and Rowntree (1986),

> Every migration, from the ancient dispersal out of Africa to the present-day movement toward urban areas, is governed by a host of push-and-pull factors. These act to make the old home unattractive or unlivable and the new home attractive or at least an alternative.

While rural to rural, urban to urban, and urban to rural are important migration patterns, rural to urban migration and the resulting urbanization is a strong force shaping our society. With rapid urbanization comes shifting political power, changing economic patterns, city service overloads and the need to respond with new strategies to environmental concerns.

Human and population geographers examine migration in an attempt to see patterns of push and pull factors. From these sources and other statistical data some common factors appear, such as economics, gender and education. For all non-forced migration, strong psychological and sociological forces are at play in the decision making process, linking geography with these other disciplines.

Learning Strategies:

Prior to the first class period devoted to these lessons, students should complete the survey of their rural/urban migration patterns on the Rural-Urban Data Sheet included with this lesson (Handout 1).

1. As a class, tabulate the rural/urban statistics the students have gathered. Record the number urban, number rural and total number reported. Using a calculator, quickly turn these numbers into percentages in the table below.

	Urban	Rural	Total	%Urban	%Rural
Grandparents					
Parents					
Students					

2. Use the information in the table as a springboard for presentation of the four types of migration (rural to urban, rural to rural, urban to rural, and urban to urban), discussing and deciding reasons for the class pattern and defining urbanization and migration.

3. Initiate a discussion of catalysts of migration including the push and pull factors. Use of the Migration Chart included with this lesson (Handout 2) will help give concrete examples of these factors and types. Place students in teams and allow them time to find examples of migration from recent events or from their own geographical area.

4. Describe two location choices to students: one being a city having more crime, higher housing costs, higher taxes, higher food costs, poorer air quality, and less personal space; the other being a rural area or small town without these qualities. Ask "Why would one choose to live in the city?" This launches a discussion of urbanization. Students should list reasons why they would or would not wish to live in a city. Culminate this lesson with a discussion of cities seen as a geography of hope (Salter, Lecture, Summer Geography Institute, 1989) because of the possibility of greater opportunities.

5. Present selected United States and Western Hemisphere urbanization statistics and trends (found in the *U.S. Statistical Abstract* and a world almanac) and ask students such questions as "What does this information show?" "What can we expect in the 2000 census?" "Does the class pattern follow this national trend?" "Why or why not?" Assign mapping of data to student teams. Explain briefly thematic mapping principles, including choosing categories, coloring or shading. Display of the completed maps should result in the generation of questions as students see patterns that are easily understood contrasted with those that require greater knowledge and understanding. This demonstrates to students the continuing need for geographical research.

Conclusion:

Use examples from the essay "Engendering the Discovery of the New World" (this volume, 118) as a culminating activity allowing the students to use the skills and knowledge they have acquired to fit these examples into their knowledge system about migration in general.

Evaluation:

A formal evaluation instrument could use objective questions to examine the students' knowledge of vocabulary, and essay questions to allow them to demonstrate their understanding of trends. Informal evaluation should be an ongoing process as the instructor monitors group discussion, team input, and maps produced.

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Alternative Strategies:

For students who find it difficult to discuss the causes of migration, a classroom demonstration could prove useful in grasping this concept. Rearrange the room so that a variety of conditions occur, such as too warm, too cold, too close to the teacher and too near a window. Then add a variety of items to the room, such as a radio with music or food. Have students select where they wish to sit. After they make these selections have them describe their reasons for the choices. Be certain to include as one of the possible reasons by others you know or like.

Enrichment Strategies:

A. Students can collect, graph, and present more detailed information about their families' migration patterns and the reasons for the migrations.

B. Map urbanization percentages for a series of decades for the United States by state or for the Western Hemisphere by countries.

C. Investigate the causes of some of these patterns of urbanization.

D. Choose a state and demonstrate the change in the political power base of the rural parts of that state by discovering and charting the number of state senators and representatives that come from the rural section over a period of several decades.

E. Write to some of these state senators and representatives to elicit information about rural versus urban issues.

F. Investigate cultural diffusion, linguistic diffusion or acculturation.

G. Investigate personal space dimensions, inheritance laws, food preferences, religious beliefs and marriage practices as they relate to barriers to migration.

H. Examine ways that land availability, commercial agriculture, environment and industrialization affect migration.

I. Learn how dominate personalities, emigrant letters and advertising encourage migration to an area.

J. Examine local mobility patterns within a city, including moves to the suburbs or different sections within the city.

HANDOUT 1

Rural - Urban Data Sheet

This sheet is to help you discover some data we will use in class. You will be finding out which of your family/ancestors grew up on farms and which grew up in towns and cities. Simply write yes or no in each box.

Do you live on a farm?

YOU

Did your parents grow up on a farm?

MOTHER

FATHER

Did your grandparents grow up on a farm?

GRANDMOTHER

GRANDFATHER

GRANDMOTHER

GRANDFATHER

HANDOUT 2

A Migration Chart

	1	2	3	4	5
R-U	Irish to Northeast USA after 1840	American farmers to cities by end of 18th century	Blacks from Southeast USA to Northeast USA after 1890	Enclosure movement in United Kingdom in 18th century	USA Dust Bowl farmers to California cities in 1930s
R-R	USA Dust Bowl farmers to Southwest and West	Farmers from Northeast USA to Midwest after 1775 (Cumberland Gap)	Muslims to Pakistan/ Hindus to India (1947-49)	Farmers on the edge of any U.S. city, 19th and 20th centuries	Bering Strait migrants to Northwest US, 20,000-40,000 years before present
U-R	Cambodians from cities to rural areas in the 1970s under the Khmer Rouge	Japanese to Hawaii, California, 1890s-1930s	Germans migrating to U.S. Middle Atlantic Region from late 17th century	American commune movement, 1960s	Exodus of senior citizens from all over the USA to Florida
U-U	People out of Beirut in the 1980s	Laborers from industrial northeastern USA to the sunbelt (1960s)	Jews and other Germans to the United Kingdom and USA, 1930s	Cuban migration from Havana to Miami	Departure from Los Angeles to other metropolitan areas because of pollution

KEYS:

Movement:

R-U = Rural to Urban
R-R = Rural to Rural
U-R = Urban to Rural
U-U = Urban to Urban

Catalysts for Migration:

1 = War and Calamity
2 = Economics
3 = Religious and Social factors
4 = Political factors
5 = Environmental factors

Created by Christopher Salter, Chairman, Department of Geography, University of Missouri and Director of the National Geographic Society Summer Geography Institute.

Regional Variations in Quality of Life in the Americas

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In his recent book about Mexico and Mexicans, journalist Alan Riding describes the cultural landscape across the border in Mexico in these terms:

> Probably nowhere in the world do two countries as different as Mexico and the United States live side by side. As one crosses the border into Mexico from, say, El Paso, the contrast is shocking -- from wealth to poverty, from organization to improvisation, from artificial flavoring to pungent spices (Riding 1986, ix).

Recognizing this difference is important, but understanding how the difference came to be and why it persists is even more important. The latter is infinitely more difficult. According to Riding:

> . . . the physical differences are least important. Probably nowhere in the world do two neighbors understand each other so little. More than by levels of development, the two countries are separated by language, religion, race, philosophy and history (Riding 1986, ix).

Some Latin Americans feel that a contrast of similar proportions exists between Latin American countries. For example, in 1973 the well-known Uruguayan writer Eduardo Galeano wrote:

> I recall an editorial in the Buenos Aires daily a couple of years ago. An old conservative newspaper was bellowing with fury because some international document depicted Argentina as an underdeveloped country. How could a cultured, European, prosperous, white society be measured by the same yardstick as a poor black country such as Haiti? (Galeano 1973, 297)

Quality of life is a useful concept for comparing Latin America with the United States and Canada and comparing regions within Latin America. By examining facts and impressions about living conditions in individual countries we can group countries with similar quality of life and examine some of the reasons for those variations. Measuring living conditions mathematically is difficult, so before discussing the regions of Latin America, two measures of quality of life are introduced here: the United Nations' Human Development Index (HDI) and per capita Gross National Product (GNP). The great variety of distinctive "Latin Americas" often makes it difficult to generalize about the region as a whole. But this diversity also provides the opportunity to practice comparing and contrasting individual countries in order to achieve a realistic picture of the region.

The Human Development Index (HDI)

In a recent report the United Nations Development Program described the quality of life in 130 countries of the world using a new figure called the Human Development Index. This index is calculated with data on purchasing power, life expectancy and literacy. This index is similar to the Physical Quality of Life Index (PQLI) except that HDI includes a measure of economic well-being expressed as purchasing power.

According to this report, 17 countries have higher HDIs than the United States, which has an HDI of 0.961. Most higher-ranked countries are in Europe, and Japan is ranked highest in the world. Most countries of Latin America are in the middle third in world rankings, with Chile, Costa Rica, Uruguay and Argentina in the highest ranks in Latin America and Haiti, Bolivia, Honduras and Guatemala in the lowest ranks (see Table 1).

In Latin America, per capita GNP often correlates highly with the quality of life in a country. Countries with low Human Development Index scores generally have low per capita GNPs. But if per capita GNP is a generally reliable indicator of living standards, then why bother with more complex measures of quality of life?

First, per capita GNP reveals only average wealth for a nation as a whole. In some countries, most people are actually considerably worse off or better off than their national per capita GNPs suggest. For example, the United States ranks much lower according to its Human Development Index than when ranked by per capita GNP. No country in Latin America has a similar situation. However, four Latin American countries (Cuba, Chile, Jamaica and Costa Rica) have much *better* living conditions than their per capita GNPs might suggest. All four of these countries have comparatively high literacy rates and/or long life expectancy, which reflect better average living conditions. In Costa Rica and Chile per capita GNP increases greatly when adjusted for purchasing power; a day's wages go farther in these two countries than in most places. In Jamaica and Cuba many services are provided free by the government so families with small incomes have access to education and health care beyond their incomes. For these reasons, it is important to consider other social and economic characteristics along with per capita GNP when comparing countries and regions.

A second reason for looking beyond per capita GNP figures is because they describe only average conditions and not the gap between conditions of rich and poor families. Victor Alba, a noted Mexican political scientist, describes what this means in human terms:

> Those Latin Americans who can consider themselves well off -- the latifundists, big industrialists, bankers, highly successful professional men, leaders in the bureaucracy and the army -- live much better than the rich American, although their actual income and capital may be smaller. The rich Latin American pays fewer taxes, to begin with; he owns palatial residences within and outside his country; he has many servants; he travels a good deal. *His living conditions, which would be considered luxurious anywhere, become in his own country, by comparison with those of the rest of the population, fabulously sumptuous.* (italics mine; Alba 1969, 182)

The other side of the coin, according to Alba, is that

> . . . the poor of Latin America live in much greater poverty than those of the United States; they have very little chance of ever owning a refrigerator or a bicycle, not to mention a television set. The living conditions of the peasants, in particular, are greatly inferior to those of any social group in the United States [with the possible exception of migrant workers]. (Alba 1969, 181)

In 1975, the richest ten percent of Latin America's population received over 47 percent of the total income, whereas in the United States the wealthiest ten percent controlled only 28.3 percent of the total income (Portes 1985). As the gap between rich and poor grows in magnitude, it also grows in importance. The tensions that can arise under increasingly inequitable circumstances are invisible in the per capita income figure, but can be accounted for by considering purchasing power and access to basic services.

North America and Latin America

In terms of the Human Development Index, Canada, in fifth place in the world (HDI of .983) and the United States, in eighteenth place (HDI of .961), are considerably better off than Latin America as a whole, where half of the countries rank below 50. Explanations for this contrast have coalesced around three major themes.

First, the relatively poor economic situation of Latin Americans results partly from the timing of industrialization. Countries such as the United States, France and Great Britain industrialized early and advanced quickly in their accumulation of capital, technology and infrastructure without much competition. Today, for Brazilian automobile manufacturers or Mexican furniture makers to succeed even in their own countries they must compete with large foreign companies with more experience and capital.

A second explanation for the deep division between North and Latin America was offered first by Latin Americans themselves and focuses on the dependence of Latin American countries on imports of manufactured goods and technology and on exports of raw materials. Balancing imports and exports is an essential part of the North-South gap, and is almost impossible to achieve because exports of raw materials generally cannot pay for needed imports of manufactured goods.

A third explanation for the North-South gap argues that cultural values and attitudes account for Latin Americans' poor quality of life. In the past, wealth was used for non-productive purposes such as church decoration, lavish lifestyles of the aristocracy and support of the Spanish economy during the colonial period. Today, lack of an entrepreneurial spirit among the educated and affluent is blamed for the slow pace of economic development.

Whatever the actual cause or set of causes for Latin Americans' less affluent lifestyle, one thing is certain: it is important to understand all the factors involved in a country's place in the world economy, including its human and natural resource base, its social values and its priorities. Without these foundations, we will continue to suffer from stereotypes of each other. North Americans will blame lower living standards in Latin America on its poor, lazy, uneducated and fatalistic peasants, perhaps without even knowing that many Latin Americans consider North Americans to be materialistic, addicted to the latest technology and ignorant of history, the arts, philosophy, current events and good literature. This understanding of social *and* economic life is important as our economic ties to Latin America expand and as greater numbers of Latin Americans come to the United States as tourists, temporary workers, scholars, investors and immigrants.

Conclusion

The reasons for the differences in quality of life between North America and Latin America and within Latin America itself can be traced back to historical patterns of economic change, political development, patterns of land and resource use and population growth and settlement. For that reason, current success stories and calamities need to be put in a long-term perspective. A news report about a single huge industrial project or peasant uprising or military takeover is insufficient to explain the complex causes of today's situations. An approach that groups countries for comparative purposes in explaining the reasons for twentieth-century differences might give both history and geography more meaning than just memorizing names of places and historical facts country by country.

The importance of these regional variations lies partly in the importance which Latin Americans themselves give to them. Future trends in these differences are also of great significance. A narrowing gap between rich and poor at several scales would bode well for hemispheric political and economic stability.

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Table 1

Economic, Demographic and Social Indicators from Latin America

	HDI	PQLI 1981 rank	Per cap. GNP 1988 in US $	% Und. employment 1980	Infant Mort. per 1,000 births 1990	Pop. per Physician	Daily Caloric Intake 1984	Pol. Rights 1972-1987
Countries with Lower Quality of Life								
Haiti	.356	126	360	--	122	8198	1843	6
Bolivia	.548	108	570	74.1	110	2117	2114	2
Honduras	.563	96	850	--	63	3120	2208	2
Guatemala	.592	97	880	50.9	59	8608	2298	3
El Salvador	.651	83	950	49.0	54	3179	2163	3
Dominican Rep	.699	87	680	--	65	402	3094	1
Nicaragua	.743	88	830	--	69	2228	2284	5
Peru	.753	86	1,440	55.8	76	1480	2144	2
Ecuador	.758	82	1,080	63.3	63	1622	2031	2
Countries with Moderate Quality of Life								
Paraguay	.784	69	1,180	--	42	1747	2813	5
Brazil	.784	78	2,280	44.5	63	1648	2629	2
Colombia	.801	79	1,240	41.0	46	1969	2578	2
Jamaica	.824	41	1,080	--	16	-	--	-
Venezuela	.861	60	3,170	31.5	33	888	2550	1
Countries with Higher Quality of Life								
Mexico	.876	67	1,820	40.4	50	1251	3147	4
Cuba	.877	21	--	--	12	722	3094	6
Panama	.883	57	2,240	45.5	23	1129	2420	5
Argentina	.910	38	2,640	27.7	32	383	3195	2
Uruguay	.916	37	2,470	27.0	22	533	2721	2
Costa Rica	.916	36	1,760	27.2	17	1441	2772	1
Chile	.931	52	1,510	28.9	19	1935	2589	6
U.S.	.961	11	19,780	--	10	595	3652	1

Sources:

HDI: Calculated from life expectancy, adult literacy and purchasing power, as explained in United Nations Development Programme, Human Development Report 1990, cited in "Development Brief: The Human Condition," The Economist, May 26-June 1, 1990, pp. 80-81.

PQLI: Calculated with life expectancy, infant mortality and literacy, from Overseas Development Council. Rank is the country's rank out of 164 countries in 1981, World Book of Rankings.

Per capita GNP and Infant Mortality: Population Reference Bureau, Inc., "1990 World Population Data Sheet" (Population Reference Bureau, Inc., Washington, DC.)

% Underemployment, Population per Physician, Daily Caloric Intake, CEPAL Review, 1984 as cited in J.W. Wilkie, ed., Statistical Abstract of Latin America, Vol. 17. (Los Angeles: UCLA Latin American Center Publications, 1989), pp. 321, 148, 156.

Political rights (ranked from 1 as best to 6 as worst for open voting, multi-party elections, honest elections, foreign/military control) from "Freedom House Ranking of Political and Civil Rights, 1972-84," cited in J.W. Wilkie, ed., Statistical Abstract of Latin America, Vol. 17. (Los Angeles: UCLA Latin American Center Publications, 1989), pp. 210-212.

Teaching The Quality Of Life: A Learning Activity to Accompany *Regional Variations In Quality Of Life In The Americas*

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Introduction:

In this lesson, students will evaluate the concept of quality of life. Through photo interpretation, brainstorming, data analysis, mapping and map interpretation students will discuss their interpretation of quality of life, develop a working definition, analyze measures used to describe quality of life and map and interpret some of these measures. They will then analyze regional variation in quality of life in North America and Latin America.

Grade Level: 10-12

Time Required: 2 to 3 days

Themes/Key Ideas:

Place: Physical and Human Characteristics

A. Places can be described in different ways

B. Places can be represented by data and narrative

C. People's descriptions of places reflect their values, attitudes and perceptions

Concepts: Absolute and relative location

Objectives: Students will:

Knowledge:

A. Develop a definition of quality of life

B. Evaluate a variety of variables used to measure quality of life

C. Compare the quality of life in Latin America and the United States.

Skills:

A. Review finding places on maps

B. Observe photographic evidence

C. Prepare maps

D. Graph or map variables used in measurements of quality of life

E. Interpret maps

F. Observe human and physical characteristics of places

Materials:

A. Atlas

B. Set of slides or photos from American countries (Western Hemisphere)

C. Copies of political outline maps of the Americas

D. Copies of Table 1 from essay Regional Variations in Quality of Life in Latin America

E. Colored pencils

Background:

Quality of life measures the basic needs of people, their opportunities for the future, their ability to choose and their level of economic and physical survival. Many variables are used as indicators of quality of life. The Human Development Index (HDI), the Physical Quality of Life Index (PQLI) and per capita GNP have all been used to measure quality of life. (Refer to the essay Regional Variations in Quality of Life in Latin America for explanations of these indices.) But one may question the adequacy of these indicators to describe conditions in a particular country.

Learning Strategies:

1. Show students a series of slides or photographs from a variety of American countries. Be sure to depict scenes that make it difficult for students to tell whether the country is a "rich" or "poor" one. Have students make an evaluation of the quality of life in the country based on what they have viewed in the slide. Have them rank the quality of life for the country in the photo as high, medium, or low.

2. Repeat the slide show, but this time tell students the name of the country depicted in the slide. Now have them give it a second quality of life ranking, based on information they may know about the country.

3. Discuss any changes in ranking they made after the second showing.

4. Now have students brainstorm about the components that lead to a good quality of life. What factors are necessary? What components are undesirable? Make sure students move beyond material things. Try to encourage students to think about such things as type of government, health, economics, pollution, water, education, and freedom.

5. Distribute copies of Table 1 and have students examine the HQI, PQLI and Per Capita GNP for countries in the Americas. Tell them that these indices are often used to compare quality of life. Ask them to find the highest and lowest ranked countries and to examine the ranking for each measure. Are countries always in the same place? Pick out some examples and analyze them. For example, Jamaica ranks much higher with the PQLI scale than with the HDI or per capita GNP. This means that purchasing power in Jamaica lowers its ranking on the latter two indices. When the health indicators are given greater weight, Jamaica's ranking rises. Cuba is another example. If one used only the PQLI measure, Cuba would be ranked very high. This is because the socialist nature of the government means that there is good access to medical care. If purchasing power is considered, the ranking drops. If political rights were considered, Cuba's ranking would drop even further. Another example is Venezuela. If Per Capita GNP were used alone, Venezuela would be in the category countries with higher quality of life. Have students use the information they've gained in this exercise to critique the variables used to measure quality of life.

6. Show the slides or photos one more time. This time describe the scenes shown in the slides. Discuss how different factors may affect the quality of life for the region and what is wrong with using only one slide or photo to depict a place. Discuss the variations of quality of life in the country. Some people may be very wealthy and appear to have an excellent quality of life while others may be at the other extreme, poor with a low quality of life. Demonstrate how quality of life indicators blur intracountry and intercountry differences.

7. Have students divide into groups of 3 to 5. Have each student in the group draw an area/value (choropleth) map using a different indicator to represent quality of life. Basically, a choropleth map is one based on a range of data for which you have determined the highest and lowest values (the range) and have divided the range by the number of mapping categories you plan to use. About five categories should be sufficient. Select a color for each category and shade in the countries on the outline map using the colors you have chosen. The colors should increase from light to dark as the categories increase in value. Each group should develop a series of hypotheses to test, based on the indicators that they are mapping. Students should use the HDI, PQLI, and per capita GNP as their measures. Older students can develop their own index using a combination of variables of their choice. Examples of hypotheses are: Countries ranked high in quality of life using the PQLI index will rank lower when using the other indicators; and Central American countries will consistently rank higher than South American countries.

Conclusion:

As students are using maps to test their hypotheses, evaluate the mapping process. Were the categories appropriate? Further evaluate the indicators used to measure quality of life. Do the students see a better method of evaluation?

Evaluative Methods:

Critique the ability of students in the development and analysis of choropleth maps. Were they able to use an atlas to locate countries, for example? Also critique the indices.

Alternative Strategies:

List some factors that may be used in the determination of quality of life and have students discuss whether they should be included with the other measures.

Enrichment Strategies:

Have students develop their own quality of life indices. Have students compare the rankings of countries in their index with the HDI, PQLI, and GNP indicators.

The Far South of the New World: South American Antarctica and the Southern Islands

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This essay explores the extreme southern reaches of the Americas, and presents the argument made by many Latin Americans (and most South Americans) that a portion of Antarctica should be considered part of the Western Hemisphere. That argument is based, in part, on the islands that form a long curving arc between the tip of South America and the long Antarctic Peninsula, which extends out toward the American continent. Several of these islands--the Falklands/Malvinas--became well-known to the outside world in 1982 when they were the scene of a short but bitterly fought war between Argentina and Great Britain.

But even if we accept the South Americans' argument that a portion of Antarctica is associated with the Americas, it is also true that Antarctica is a continent unto itself with a special identity as a geographically and politically distinct region. And so this essay also looks at the Antarctic Treaty System, which for the past 30 years has controlled human activities in this region, that has never had a government. Finally we will consider the current debate over Antarctic resources (including the possibility of oil and minerals) and whether they should be developed or left undisturbed as part of a world park in this pristine and unspoiled "last place on earth".

Where Does the New World End?

If asked where they thought the Western Hemisphere ended in the South, most citizens of the United States would probably say "Tierra del Fuego at the tip of South America." But the answer that a South American would probably give, especially those from Argentina or Chile, is that there is continuity from Tierra del Fuego through a series of islands to the Antarctic Peninsula, and from there into the heart of Antarctica. Argentines and Chileans would probably also add that their countries end at the South Pole, and that all maps published in their countries must show that their sovereignty includes a pie-shaped sector of Antarctica with its point on the Pole.

Where does this notion come from? In part its roots are geological, in part geopolitical and in part historic. The history goes back as far as 1493, when the Pope divided the newly found lands of the world between his Spanish and Portuguese Catholic subjects along a line and extending from pole to pole at approximately 50°W longitude.

Many Spanish and Portuguese treaties and diplomatic documents that followed included this idea that South America extended to the South Pole and thus had a link to Antarctica, even though people did not set foot on that icy continent until the early 1800s. When Spain and Portugal lost most of their American colonies at the beginning of the nineteenth century the newly independent nations of southern South America (especially Argentina and Chile) adopted this idea. Geological discoveries show a continuity of rocks and sedimentary deposits between South America and Antarctica, so that the long series of mountain chains we know as the Rockies and the Andes, stretches on to the Antarctic continent. The long curve of islands into the South

Atlantic is due to a tectonic plate that pushed into the gap between Tierra del Fuego and the Antarctic Peninsula to form the Drake passage.

The American Southern Oceans and Their Islands

The southern islands are remote, rugged, cold, windy, and little known. Even on the largest of them, the ones the British call the Falklands and the Argentines the Malvinas, life is hard. There are no trees and the 2,000 inhabitants make a precarious living from their herds of sheep. The more remote islands, such as South Georgia and South Sandwich, are totally uninhabited except for small contingents of scientists or military personnel. These humans are vastly outnumbered by large groups of seals, penguins and other birds that live and breed on the islands.

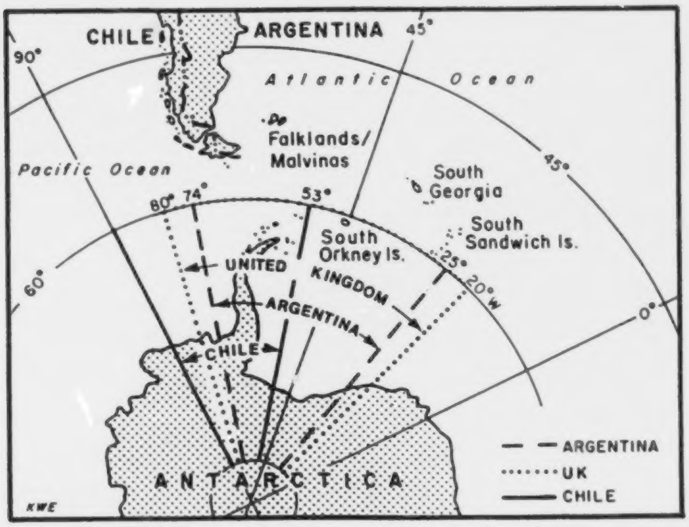
Perhaps the greatest significance of these islands is geopolitical, if we consider geopolitics as the relationship between geography and power politics. The islands of the South Atlantic (Falklands/ Malvinas, South Georgia, South Shetlands and South Orkneys) have been claimed by both Great Britain and Argentina for over a century and a half. Each side tells a different story of their discovery and early settlement. It is difficult to determine which of these reasons was most important, but there is little doubt that geopolitical considerations were significant among the various factors which led to the 1982 conflict between these two countries.

South American Antarctica

Those who believe that there is a South American Antarctica usually define it as a one-quarter section of the continent from the Greenwich Meridian (0 degrees) to the 90 degree West Meridian (Map 1). This would be one of four quadrants, the others being the African, the Australian-New Zealand and the Pacific Ocean quadrants.

The argument for a South American Antarctic quadrant is strengthened by the fact that South America comes closer to Antarctica than any other continent: about 600 miles across the stormy Drake Passage. The Antarctic Peninsula is the dominant feature in this quadrant, and is known jokingly as the "banana belt" of Antarctica because its climate is less severe than that of the rest of the continent. During the summer months temperatures rise above freezing in areas of the peninsula, and where these areas are near water they become the areas favored by the seals, penguins and other species for breeding and raising their young. In recent years

MAP 1



Source: Child, Jack. *Antarctica and South American Geopolitics*. 1988 (Praeger): 75. Copy permission provided by Jack Child.

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they have also been the areas most visited by scientists, naturalists and even tourists.

The Antarctic Treaty System

Antarctica is the only land surface on earth that does not have an accepted national system of government. True, there are seven nations that have a claim on parts of Antarctica, but these claims are not generally accepted by the outside world, and in any case have been very severely limited by the Antarctic Treaty and the system that has grown up around the Treaty since it was signed in 1959.

One of the important features of the Antarctic Treaty System is that it is a political arrangement which grew out of scientific cooperation. The roots of this unique agreement go back to the late 1940s and early 1950s, when increasing interest in Antarctica lead to competing claims and friction, especially in the South American quadrant.

Over the years since 1961 a number of other nations have begun to take an interest in Antarctica. Some of these also established scientific bases there, while others sent individuals to work at the bases of other nations. Two classes of membership were established in the Antarctic Treaty System. Those nations (including the original 12) that had a permanent presence in Antarctica are the full voting members, called consultative parties. Other countries can sign the Treaty, but if they did not have the means to set up permanent bases in Antarctica or otherwise show a strong commitment to research they are non-voting or non-consultative members of the Treaty. At present there are 26 consultative parties and 13 non-consultative ones (Table 1). But even though there are only 39 nations in the Treaty System, these 39 represent all the major and most of the middle powers in the world, and about 80 percent of the world's population.

For many years after the signing of the Antarctic Treaty in 1959 there were few problems among the nations with a presence on the Continent. The United States and the Soviet Union cooperated in their scientific efforts, as did the three countries with claims in the South American quadrant (Argentina, Chile and the United Kingdom). As long as the principal interest in Antarctica involved only scientists, naturalists and small groups of tourists, this situation could have continued indefinitely. But in the 1970s and 1980s came the growing realization that the planet's nonrenewable resources were finite, and that when these resources (especially oil) begin to peter out in warmer areas, there would be pressure to seek them in more difficult regions, such as Alaska, the Arctic and Antarctica. Because there was little worry about this problem in the 1950s, the original Antarctic Treaty did not discuss how these resources might be developed or who would gain economic benefit from them. Even though Antarctica still had a powerful "guardian angel" in the form of intense cold and extremely difficult weather, many people worried that the discovery of important resources, such as an oil field in the relatively mild northern reaches of the Antarctic Peninsula, might set off a new set of tensions between the nations with a presence there, and especially those with sovereignty claims. And so the questions of resources, ecology and conservation versus development became the principal concern of the Antarctic Treaty members in the 1980s and into the 1990s.

Ecological Issues in the American Southern Oceans and Antarctica

It is important not to exaggerate the significance of possible Antarctic resources. It may well be that the greatest development of resources in Antarctica and its surrounding waters has already taken place in the form of the whaling in South Atlantic waters in the first half of this century. There is an important lesson here: there was little control over this whaling, which resulted in pushing various species of whales almost to extermination.

If we were to list the most important resources that are currently being exploited in Antarctica and the Southern Oceans, we would have a very short list that might include fishing, scientific knowledge and tourism. But even these have had an appreciable impact on the fragile Antarctic environment. As an example, conservationists point out that shortly after the Exxon Valdez disaster in Alaska, an Argentine navy ship carrying tourists and supplies to its Antarctic bases ran aground and sank in the waters near the United States base in the Antarctic Peninsula. Even though this was not an oil tanker, she was carrying fuel and other supplies which have had a lasting impact on seals, penguins and other birds. Should oil ever be discovered and exploited here as in Alaska, the threat of major damage to the

TABLE 1

The 39 Antarctic Treaty Signatories (as of June 1991)

I. Original Consultative Parties (12)

a. ***Claimant nations (7)***
- United Kingdom
- Norway
- France
- New Zealand
- Argentina
- Australia
- Chile

b. ***Non-Claimant Nations (5)***
- South Africa
- Belgium
- Japan
- United States
- Soviet Union

II. Later Consultative Parties (14)
- Poland
- Germany
- Brazil
- Uruguay
- Italy
- Spain
- People's Republic of China
- India
- Sweden
- Peru
- Finland
- South Korea
- Netherlands
- Ecuador

III. Non-Consultative Parties (13)
- Czechoslovakia
- Denmark
- Romania
- Bulgaria
- Papua New Guinea
- Hungary
- Cuba
- Greece
- North Korea
- Austira
- Canada
- Colombia
- Switzerland

Note: "Consultative" parties have full voice and vote on all matters. "Non-consultative" parties have no vote.

environment would be very real. Many conservationists take the position that no development of Antarctic resources should ever be permitted, and that it should be preserved forever as a special world park open to very carefully controlled numbers of scientists and tourists.

Those who favor development argue that the history of people on this planet teaches us that whenever a valuable resource is found, someone will develop it. Pressures to find new sources of energy and food will inevitably increase as the earth's population grows and these resources begin to run out in other areas. The world park idea is splendid, they argue, but unrealistic. It would be much better to have an addition to the Antarctic Treaty that would allow the member nations of the Treaty to place careful controls on resource development, perhaps through something like an Antarctic Environmental Protection Agency.

In October, 1991, after many years of discussion and complicated negotiations, the member states of the Antarctic Treaty System signed a protocol (a supplement to the basic 1959 treaty) that bars all mining activities in Antarctica for 50 years. If this protocol is fully respected by all the nations that might have an interest in Antarctic minerals and oil, there is every reason to hope that Antarctica will be well on its way to becoming the first world park in an area that is about one-tenth of the earth's surface.

But even with this protocol in place, the issues of conservation and development will continue to be important in the South American quadrant of Antarctica and the sub-Antarctic waters and islands nearby. The geological continuity to oil and gas-producing areas in the tip of South America and the relatively benign climate suggest that the Antarctic Peninsula could be the place where Antarctic oil might first be found, if it does exist there. The end of the fifty-year moratorium on mining will come at a time in the twenty-first century when mineral resources (especially oil) may be severely depleted in other parts of the globe, and when technology might make mining feasible in areas such as Antarctica. Should this happen without a strong legal framework to control or prohibit development, it might be impossible to stop one of the many nations with a presence on the Peninsula from developing this resource. And finally, the fact that three nations (Argentina, Chile and the United Kingdom) have claims on the Peninsula suggests that the geopolitics of this resource development could quickly turn confrontational.

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The Development Of Antarctica: A Learning Activity To Accompany *The Far South Of The New World*

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Introduction:

This activity uses a game to demonstrate the "tug of tensions" that exists among the world's nations as a result of their positions regarding development of resources and use of space in Antarctica. It illustrates the differences that are created between countries with differing philosophies, beliefs, values, or economic needs concerning territorial and environmental rights. The activity is meant to be an introduction to a unit on Antarctica rather than a sole instructional activity.

Grade level: This learning activity is suitable for secondary school, grades 7-12.

Time Required: One 45 to 50 minute class period.

Themes/Key Ideas:

Location, place, region, and relationships within places: humans and environments. Key ideas include how people perceive, modify and influence regional and global systems and how interdependence produces tension.

Concepts: Territorial and environmental rights, interdependence, political tension.

Objectives: Students will:

A. Understand the tension created by opposing viewpoints and activities in Antarctica.

B. Become aware of international political interactions in a world region governed by a treaty.

Materials:

A. A large ball of string

B. Index cards for each player

C. Handouts 1 and 2

D. World Atlas

The Learning Activity

Background:

If this activity is used to introduce a unit on Antarctica, students can participate without prior knowledge of the region using the handouts provided. If the activity is used as a conclusion to a unit, each student could play the game using his or her knowledge about the topic.

Learning Strategies:

Suggested Procedure for the Activity:

1. Using Handout 1, prepare an index card for each student. Put the name of a country on one side of the card and its position on Antarctica on the reverse side. (Teachers note: The teacher can prepare the cards in advance or students can prepare the cards in class.) Have students stand and form a circle. Shuffle the cards. Give each student a card and allow adequate time to read his/her card's information.

2. The teacher will need to facilitate the dialogue and carry the ball of string.

3. Ask the student who holds the Argentina card to begin by stating that country's stand on an issue. For example, the student could say: "I am the country of Argentina and I have a long standing claim to land in Antarctica." The teacher will hand the string to that student.

4. The teacher then calls out the name of each country, and each student states their country's position. The teacher passes the string across the circle to the students as they read each card.

5. When one student/country determines that another country has a position regarding Antarctica that affects it, the affected student/country raises the hand that holds the string. This creates the "tug of tension" on the group.

6. When all the participants are holding the string, the teacher should choose another issue that will demonstrate the variety of political stands that create additional tensions that affect Antarctica.

7. As each country perceives a conflict relating to its position, the country should tug on the string. After a very short time, the majority of the countries will feel the tension produced on the string. This will demonstrate to the students how concerns that, at first glance, seem to affect only one area, Antarctica, can affect nations worldwide.

Conclusion:

Following the activity, the teacher can lead students in a discussion of possible solutions for the problems shown in the activity.

Evaluative Methods:

Active participation in the game is the main purpose of the lesson. To extend the lesson the teacher can have each student prepare a position paper for the country that he or she represented in the game.

Source:

The idea for this game was adapted from an activity presented by Mrs. Debbie Robertson, Texas Geography Alliance Teacher/Consultant and faculty member at the National Geographic Society's Summer Geography Institutes in 1989, 1990, and 1991.

Alternative Strategies:

This game could be adapted to show other examples of interdependence such as import-export relationships, political alliances, or partners in global conflict, some of which cause "push-pull" tensions. A class or small-group discussion could be held using the questions in Handout 2.

Enrichment Strategies:

Through further research, students could develop profiles of the countries they represented in the game. They could then represent their countries in a debate or a simulation game. Using thematic maps, the students could add more information and geographic generalizations to the index card for their particular country.

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HANDOUT 1

Countries' Activities and Roles in Antarctica

The activities of various countries in Antarctica reflect divergent interests. The United States has the most scientific stations and personnel, and has the technology necessary to develop natural resources found through exploration. The Soviet Union has harvested krill and fish in large quantities and also has the technology to participate in resource development. Japan has stated it would not oppose nuclear power stations in Antarctica, and has been fishing in the waters surrounding the continent. Eastern European countries want a share of the "wealth" that is perceived to be available from natural resources, fishing, and so on. Neighboring countries of Argentina, Australia, Brazil, Chile, New Zealand, and South Africa have sovereignty concerns due to their close proximity to the continent.

Consult the Table 1 for country by country position on the various positions taken by the Antarctic Treaty consultative and non-consultative nations.

TABLE 1

Antarctic Treaty Positions by Country

Country	Vote	Krill	Resources	Sovereignty	Tourism
Argentina	yes	yes	yes	yes, had claim	yes
Australia	yes	yes	yes	yes	yes
Austria	no	no	no	no	no
Belgium	yes	no	no	no	no
Brazil	yes	yes	yes	yes	yes
Bulgaria	no	no	no	no	no
Canada	no	yes	yes	no	no
Chile	yes	yes	yes	yes,had claim	yes
China	yes	yes	yes	yes	yes
Colombia	no	no	no	no	no
Cuba	no	no	no	no	no
Czechoslovakia	no	no	no	no	no
Denmark	no	no	no	no	no
Ecuador	no	yes	yes	yes	no
Finland	yes	no	no	no	no
France	yes	no	yes	yes	yes
Germany	yes	yes	yes	yes	yes
Greece	no	no	no	no	no
Hungary	no	no	no	no	no
India	yes	yes	yes	yes	neutral
Italy	yes	no	neutral	no	no
Japan	yes	yes	yes	yes	yes
Netherlands	no	no	no	no	no
New Zealand	yes	yes	yes	yes	yes
North Korea	no	yes	yes	weak, no	no
Norway	yes	yes	yes	yes	no
Papua New Guinea	no	no	no	no	no
Peru	yes	yes	yes	yes	yes
Poland	yes	yes	yes	yes	yes
Romania	no	no	no	no	no
South Africa	yes	yes	yes	yes	neutral
South Korea	yes	yes	yes	maybe	no
Soviet Union	yes	yes	yes	yes	no
Spain	yes	maybe	yes	yes	neutral
Sweden	yes	no	no	no	no
United Kingdom	yes	yes	yes	yes, had claim	yes
United States	yes	no	yes	yes	yes
Uruguay	yes	yes	yes	yes	yes

Explanation of column titles:

Vote—Full Vote/Full voice in treaty
Krill—Want to continue fishing rights off shore
Resources—If oil or hard minerals are found in quantity, favors development
Sovereignty—Would stake claim if treaty breaks down
Tourism—Continue or promote tourist activity

HANDOUT 2

The Antarctic Treaty: Provisions and Issues

Provisions of the Treaty. Antarctica shall be used for only peaceful purposes. Freedom for scientific investigation and cooperation is allowed. Land claims are not allowed, and nuclear power plants or waste disposal are not permitted. The treaty applies to all areas south of 60 degrees South latitude, except in the open sea. Meetings may be held to make new regulations and policy. Such meetings have resulted in increased protection of plants and animals and the preservation of historic sites.

- Among the issues to consider are fishing rights in Antarctic waters. The oceans contain wide varieties of fish, including krill, which is the basis for the food chain and a high source of protein. Countries have harvested krill in vast quantities, and questions concerning its depletion have been raised.

  How can it be determined how much krill is being caught and by whom?

  Who should "police" the seas?

- Tourism is a new problem, as more and more people trek to the South Pole, to see the beauty of the continent, the colonies of penguins, and the key historical sites.

  How should tourism be regulated? A single footstep on the fragile vegetation can cause a decade of damage.

  Should only scientists be allowed to inhabit Antarctica?

  Should visits by tourists be prohibited or curtailed?

- Gas and oil exploration, while difficult, is being undertaken.

  Who, if anyone, or what nation, has rights to Antarctic oil and gas?

  Does exploitation necessarily follow exploration?

- The nuclear energy and nuclear waste disposal issues grow as environmental groups pressure countries to find alternative dump sites.

  Since no permanent population lives in Antarctica, should it be considered as a site for nuclear waste disposal?

  Who should determine nuclear waste policy, enforce regulations, and protect the continent?

- Is protection of Antarctica the responsibility of scientists, the United Nations, or the original treaty countries?

Migration Trends In The Americas

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Migration is a learned adaptive strategy. Humans move in response to changing individual and environmental circumstances, to search for better opportunities, or to widen their horizons of experience. Both internal (within-country) and international migration (between countries) are potential responses to conditions at home in comparison to conditions elsewhere. When there are communal and familial pressures at home and perceptions of wider and better socioeconomic opportunities abroad, when "leaving" is chosen over "staying" as a response to political turmoil or economic pressures (especially impoverishment) and when traditions of moving away condition many to seek temporary or permanent asylum in a neighboring host country, then emigration away and immigration into another country becomes a common survival strategy of the underprivileged as well as the well-endowed.

Movement within the nation's borders is prompted by similar conditions where changing circumstances in the rural sector disrupt agrarian society and where a modernizing urban milieu beckons as an alternative to the growing "surplus" of population in rural areas. Rapid rates of rural-to-urban migration thereby overburden the growing urban centers, not only because of the speed of such growth but also because many of the migrants' expectations of a better life are not realized without sacrifice and hardship. Rural-to-urban movement may be the dominant pattern, but significant rural-to-rural transfers occur especially where forested frontiers and newly-transformed agricultural regions promise land and employment to impoverished small farmers, the landless in overstressed rural regions and the displaced barrio dwellers of burgeoning metropoli. Where regional urban centers grow from nearby rural influxes, their resident populations seek further opportunities in the largest metropolitan capitals, thus creating patterns of urban-to-urban streams and counter-streams of urban-to-urban migrants.

The contemporary patterns of internal migration and of accompanying rapid and uncontrolled urban growth throughout the Americas are a major symptom of the transition of the hemisphere from a rural-based to an urban and metropolitan-based society. Such mass movement and displacement of people is a major sign of the problematic societal transformations the hemisphere has experienced over the last thirty years. Today, this major pattern of spatial redistribution, together with continuing high rates of natural increase, has given the hemisphere some of the world's largest metropolitan agglomerations, like Mexico City and Sao Paulo. These mega-cities are extreme cases of an urbanization transformation of the Americas that characterizes all but a few countries with urban-dominated societies. On the other hand, the economic bases of such societies remain underdeveloped, and so are still largely agricultural in orientation and unable to diversify their non-agricultural economic sectors to absorb the surplus populations residing in their cities. Despite the problems encountered in urban America, however, youthful female and male migrants continue to seek opportunities there, eschewing rural livelihoods for the wider set of opportunities city life may bring. International movement, on the other hand, differs from other migration strategies in that it is a move from one national jurisdiction to another. It is influenced by entry and exit procedures, the former often being highly restrictive. Host country immigration procedures are designed to control and selectively "welcome" international visitors. Yet there is a dynamic tension that sets the needs of the potential international migrants against the collective wants of the host society. This tension also creates social conflict when the perception of an individuals' sense of his/her rights to emigrate and immigrate is confounded by restrictive procedures practiced by host institutions. At societal or communal levels, this tension contributes to social divisiveness and inequities in host-society treatments of international immigrant groups. As often as not, the hosts differentiate between "traditional" and "new" entries, viewing the newcomers and their distinctive and alien cultures as a threat to national cohesion. Distinctions between those new immigrant groups identified as either political or economic refugees and debates over their claims on the host country for refuge and safety are also likely to increase tensions as witnessed in the differential treatment of Haitians and the Cuban "Golden Exiles."

Most desperate and most vulnerable are the illegal entrants, or unauthorized aliens, who undertake a clandestine move or who overstay their visitor's visa and thereby remain and work illegally in the host country. The United States today is host to between 3.5 and 4 million unauthorized migrants. Over half of these illegal sojourners are from Mexico, but substantial numbers hail from Western Europe, from countries in the Caribbean like the Dominican Republic, Haiti and Jamaica, and from Central American countries such as El Salvador. How many of these illegal migrants eventually return to their home countries is not known, but the circulation back and forth across the United States' border and through her airports of such international movers is believed to be considerable. Many stay as illegal residents for many years, or they might take advantage of host country amnesty programs and legalization procedures, such as the provisions recently provided in the United States by the 1986 Immigration Reform and Control Act (IRCA).

The contemporary patterns and processes of international mobility in the Americas demonstrate the complexity of this human rights issue.The hemisphere is diverse in geographical background, socioeconomic reality and development experience. International mobility in its many guises, such as relatively permanent emigration, temporary sojourning, repetitive circulation, crisis-driven refugee flight, is now a fundamental strategy used by many, if not most, of the hemispheres' people to seek opportunities "across the border" or "off the island." Castells (1982) encapsules the spirit of contemporary American immigration in the following excerpt:

> The strength of all immigrants is their capacity for hope, beyond the horrors of their condition, past and present. And such a hope is based on the conviction that their freedom to act, to work, to struggle, to be themselves is the basic precondition for their collective search for a better life (Castells 1982, 119).

In this brief treatment we first focus on the main trends in circuits of mobility that have become established international paths within the Americas: the Central American refugee exodus, Mexican unauthorized migration, the Haitian diaspora and the many and varied intra-regional and extra-regional circuits within and beyond the insular Caribbean. Sustaining these circuits are the unstable conditions in the source societies, the tensions caused in the welcoming society and the influences on the process created by the legal framework and the implementation problems of the United States immigration and refugee entry procedures. The second section introduces the main trends and behavioral bases for internal movement in the Americas.

International Mobility

Immigration is a main feature of United States' history. Looking back at the last two decades of immigration and refugee influx, the 1970s and 1980s, we are reviewing a unique epoch in the hemisphere's experience. Six central features characterize the situation:

1) The United States is by far the world's largest welcoming society for refugees and immigrants seeking permanent settlement.

2) Immigration and refugee flows to the United States in the 1970s and 1980s were at or near the highest levels ever experienced—the 1890-1920 period. Indeed, the average annual legal influx during the 1980s has been estimated to approximate 460,000.

3) Illegal volumes have accelerated in the latest decades, but estimates differ on the size and composition of this unauthorized influx. The consensus of informed opinion estimates there are

approximately four million illegal residents in the United States. Of these, over half are from Mexico, but Central American and Caribbean countries are sources for appreciable numbers of illegal overstayers, along with a select few Western European sources: Ireland, the United Kingdom, Greece and Portugal, for example.

4) Contrary to the intentions of the reforms of the discriminatory policies and practices of the legal frameworks governing United States immigration since 1965, which were to encourage all forms of diversity and pluralism, the latest decades of immigrant flows have witnessed the domination, to an unprecedented degree, of Spanish-speaking people among the entrants.

5) Enforcement of United States immigration law by the Immigration and Naturalization Service (INS) has been, and remains, remarkably lax. Further, civil rights of immigrants, refugees and even repatriating family members of United States citizens have been violated, with the processes of admission varying widely and including *ad hoc* decision-making by Consular officialdom. Flagrant abuses of deportation procedures further blacken today's immigration record of a tarnished door.

6) The projection of continuing high levels of immigration to the United States, both of refugees and American hemisphere immigrants and circulators, is assured. In part this is because of the pressures of unemployment, poverty and political instability in much of the less developed world and especially among the United State's neighbors. This is expected to increase through the 1990s, thereby increasing the potential sending population. In part, the continued influx of even greater concentrations of immigrants is assured because of the dynamic and evolutionary nature of the migration circuits which have already matured into an interconnected transnational socio-cultural system linking new immigrant enclave communities in the United States with their home communities in Central America, Mexico and the Caribbean.

Internal Mobility

Internal migration in Latin American and Caribbean countries during this century has been predominantly from rural to urban areas, with a smaller pattern of rural-to-rural streams and counterstreams between highland centers of population concentration and agricultural frontiers in tropical forest lowlands. Latin America is one of the most urbanized continents among the less developed world, with urban populations growing at rates of four to five percent per year and rural populations growing at rates of one to two percent.

Another common trend throughout the hemisphere is extremely rapid growth of the largest cities, the primate cities. During the 1950s and 1960s, the largest cities often grew at rates in excess of seven to eight percent per annum, creating several mega-cities like Sao Paulo and Rio de Janeiro, Brazil, Buenos Aires, Argentina and Mexico City, Mexico. By the year 2000 these giant metropoli are expected to have larger populations than New York City, with Mexico City reaching 31 million, Sao Paulo reaching 26 million and Rio de Janeiro reaching 19 million. In the latest decades, the 1970s and 1980s, there has been some internal redistribution of cityward populations to secondary cities and regional centers in many Latin American countries, but the primate giants still continue to grow, albeit at slightly slower rates than earlier decades.

The determining forces of these internal distributions of American populations are both structural and individual (behavioral) in nature. Structural conditions at rural origins and urban, metropolitan, or frontier destinations create the potential for migration among the population. Individual attributes and behavioral responses differentially influence migration actions, selecting those who move from those who stay, directing the choice of destination, and pre-determining the intended duration of the sojourn.

What are some of the general structural forces in rural Latin America? In combination, or as singular experiential determinants, the following emerge as important origin conditions: 1) inequitable land holding structures, such as latifundio and minifundio distributions; 2) insufficient or poor land, or landlessness; 3) violence, rural insecurity and oppression; 4) dramatic changes in the agricultural sector, such as mechanization, commercialization, land parcel consolidation and resource-exploitative operations that reduce agricultural employment opportunities; 5) few non-agricultural employment opportunities; 6) lack of medical and health facilities and services; 7) poor educational facilities; and 8) rudimentary transportation and communication networks.

Matching this set of forces that prompts outflows of rural surplus populations is a similar set of destination conditions: 1) a wider range of employment opportunities; 2) health and medical services; 3) better educational opportunities and a wider range of training options; 4) better transportation services; and 5) the demonstration effects of migration of relatives and kin, communication of successful rural-to-urban transition experiences of previous rural migrants, and establishment of rural-urban networks within family and kin systems of mutual obligation and support.

Individual attributes such as gender, age, household relationships, acquired educational and skill levels, propensity of risk-taking and previous mobility experiences, all play a part in differentiating among who moves and who stays. Few universal generalizations can be drawn concerning which attributes are most likely to be major determinants. Although youthfulness is most probably the abiding general attribute, as it is in the United States, contemporary migration research still debates the issue, and answers depend upon the place in question, the social definitions of gender roles, the socio-historical context, the family/household structures and the national and transnational fields of interaction. Suffice it to observe that today's internal migration streams in Latin America and the Caribbean are a product of yesterday's and today's situations where patterns continue to change, the selective characteristics of the streams change, and the system of movements demonstrates continuity with the past and changing futures.

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The Exponential Factor And Population Growth: A Learning Activity To Accompany *Migration Trends in the Americas*

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> *Facts do not cease to exist because they are ignored.*
>
> -- Aldous Huxley

Introduction:

A problem little understood by many people in our society is the role of the exponential factor in determining population growth of any state, nation or region. Population grows through natural increase (births minus deaths) or through migration of people into an area. For example, the population growth rate of the United States at this time is 0.7 percent to 0.8 percent, depending on the source used. Mexico, on the other hand, has a population growth rate of 2.4 percent to 2.6 percent, again depending on the source used. Each year a number of sources are made available to update these percentages as well as provide other new population data. The growth of population in these two countries is closely related to many other economic and social trends. The purpose of this learning activity is to apply a simple mathematical concept, doubling time, to show the impact of population increase.

Grade Level: Grades 9 through 12

Time Required: One class period; however, the concept presented can be used throughout a course.

Materials Needed:

Chalkboard, chalk and eraser

Overhead projector and slides if you wish to view the formula

A current data sheet with population and population growth rates for various countries

Calculator (encourage students to bring them to class on the day of the project)

Teacher Notes:

The number seventy (70) serves a "magic" purpose when attempting to compute the doubling time of any given number based on the percent per year of increase. Following is an application:

A SIMPLE FORMULA: $\dfrac{70}{\textit{Yearly Rate of Increase in Percent}} = \textit{Doubling Time in Years}$

OR $\dfrac{\textit{Doubling Time/in Years}}{\% \,\overline{\big)\, 70}}$

This formula illustrates the exponential factor, vital in understanding population increase. Following are some applications of the exponential factor, borrowed and paraphrased from Bartlett (see references).

1. If Columbus had invested $1.00 at 5 percent compounded annual interest in a bank of his choice and had waited until 1992 (500 years later) to withdraw all his savings he would have about $72,000,000,000. If he left it in the bank to continue drawing interest at the 5 percent rate, he would be gaining interest at the rate of about $114 per second!

NOTE: *Of course few of your students will accept such a preposterous idea, so you can simplify it for them by showing that if you divide 70 (the magic number) by 5 (five percent), you will get 14. Or, 70/5 = 14. That simply means that it requires 14 years for your $1.00 to become $2.00 through the earning of interest. Now ask a student how many doubling times there are between 1492 and 1992 (500 years). Surely one student will discover that 500 can be divided by 14 to determine the number of doubling times, 500/14 = 35.7, or roughly 36 doubling times. So, if you have a student who accepts the challenge, have her start with 1 ($1.00) and double it 36 times. 1,2,4,8,16,32,64,128, etc... until she has reached the 36th doubling. VOILA!!*

2. Assume you agreed to work for a rich king for the same number of days as there are squares on a chess board and the king signed a contract to pay you just one grain of wheat on the first day, two on the second, and so on. When you reached the 64th day, how much wheat would you have? Well, you would have 2^{63} (2 to the 63rd power) grains on the 64th square. If you add all the wheat on the other squares you would have about 500 times all the wheat harvested in the world this year, or more wheat than has ever been harvested in all of recorded history.

3. Of course, you can always use the famous example (or is it infamous?) of working for your parents for 1 cent a day, doubled each day for a month. When all the pennies are added the student will have... Well, let one of them figure it out.

Another application of the concept of exponential population growth is to trace it through history. Use the following table.

Table 1

Year	Time Span	Earth's Population (estimates)
0	Time of Christ	125 - 250 million people on earth
1830	1830 yrs.	1 billion
1935	105 yrs.	2 billion
1965	30 yrs.	3 billion
1975	10 yrs.	4 billion
1987	12 yrs.	5 billion
2000	13 yrs.	6.8 - 7 billion people on earth

Student Activity:

Question:

If the population of the United States is approximately 250,000,000 and the population growth rate is 0.7 percent per year, how long will it take the population of the United States to double?

Answer:

Divide 70 by 0.7 (70/.07 = 100). We see that the population of the United States will reach 500,000,000 in 100 years.

Question:

Mexico has a population of approximately 87,000,000 and its population growth rate is about 2.5 percent. How long will it take the population of Mexico to exceed that of the United States if it continues to grow at this rate?

Answer:

Divide 70 by 2.5 (70/2.5 = 28). We see that the population of Mexico will reach 174 million in 28 years. At that growth rate, it will be 348 million in 56 years. At that time Mexico will probably exceed the United States in population.

Note: Many other examples can be used. Simply consult the data base provided in your geography textbook or any other source of population data. Also, if you have access to the rates of growth in demand for various resources such as oil and coal your students can compute the time required to double the demand for that particular resource. Have fun!

Conclusion:

This lesson lends itself to many applications and can be used again and again when the teacher wishes to demonstrate the growth patterns of a particular region. Try comparing the growth of India with that of China when studying these countries. Your students will readily see that while China is working to reduce its population growth rate and thus its demand for resources, India continues to out-pace its resources with population growth and will probably soon replace China as the world's most populous nation. You may wish to compare the land mass of various countries (India and China, for example) to further amplify this issue.

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The World In A Grain Of Sand: Global Restructuring and Neighborhood Activism In Tucson, Arizona

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This essay makes "global" processes more accessible by focusing on the familiar geographic scale of the neighborhood. The objective of the essay is two-fold: to simplify the examination of global economic restructuring by exposing its effects on everyday life; additionally, to show how geographic scales from the international to the neighborhood are interrelated and how changes are negotiated by real people in real places. The accompanying learning activity (*Tucson Neighborhoods*) provides ways to make these real changes clear to students.

The first section of the essay explores an obvious linkage between the global economy and individual consumers and defines restructuring. The second section provides an explanation for restructuring and links restructuring to a specific place in the rapidly growing city of Tucson. The final section describes citizen-neighbors' responses to restructuring.

A Question of Scale: Global and Local Interaction

The 1980s celebrated global phenomena. Catchy phrases like "the global marketplace" and "global terrorism" forced Americans to consider the links between seemingly local issues and large scale "global" transformations. Rock musicians simplified the complex linkages that exist between the people of wealthy nations and the rest of the world through the international fund raising concert, Band Aid, and the enormously popular song "We are the World." Yet, how is it that we -- you, I, and garment workers in southeast Asia -- are related? What is the reality behind the ubiquitous bumper sticker, "Think Globally, Act Locally?"

One of the most immediate ways that the scale of our everyday lives is linked to the global scale is through the economy. To most, a global marketplace, though understandable in the abstract, is difficult to comprehend in practice. It is a challenge for even the experts to predict the behavior of an economic system that transcends national boundaries. Yet, at a more personal level, most of us can point to effects of the global economic system on our lives. For instance, if you look at the labelling on any three items of clothing or accessories you are now wearing, it should come as no surprise that your Levis were manufactured in the United States, your Vuarnet sunglasses in France, and your Air Jordans in Korea. The global economy is tangible in the brands of products we consume and the prices we pay for them. Your internationally manufactured wardrobe links you directly to workers around the country and all over the world.

Economists maintain that the production of clothing by American manufacturers like Esprit and The Gap in far-off countries like Hong Kong and Korea enables the widest possible competition among firms, which translates into cheap, high quality products for the consumer. While the benefits of a globally-integrated economic system are many, there have been tremendous costs paid for "globalizing" the economy. Researchers employ the term "restructuring" for the changes that have been occurring in American cities and regions over the last two decades. The most obvious signs of physical restructuring are manifested in the demolition of older buildings and neighborhoods and their replacement with high rise office buildings and upscale shopping facilities. Social restructuring has also occurred, often by way of "gentrification," the supplanting of low income residents and businesses with high income residents and new businesses. Economic restructuring has also unfolded as traditional high wage, high skill manufacturing workforces were made obsolete when American firms began exporting their production activities to other parts of the United States and especially to foreign countries, taking advantage of cheap labor and more permissive occupational and environmental regulations (Castells 1988; Frobel et al. 1980; Thrift 1986). Finally political restructuring altered methods of enhancing growth and redistributing wealth in response to various interest groups and to federal urban policies (Stone and Sanders 1987; Clark 1989). At the same time that restructuring has facilitated a global economic system, its impacts are experienced most directly at the local level where the landscapes of cities and regions have been refashioned to serve new modes of investment through the growth of service and service-related activities (Knox 1991; Noyelle and Stanback 1984). There have been changes in the economy, politics, society, and the physical form of American cities, but it may not be so clear how and why these changes have occurred.

Why Restructuring?

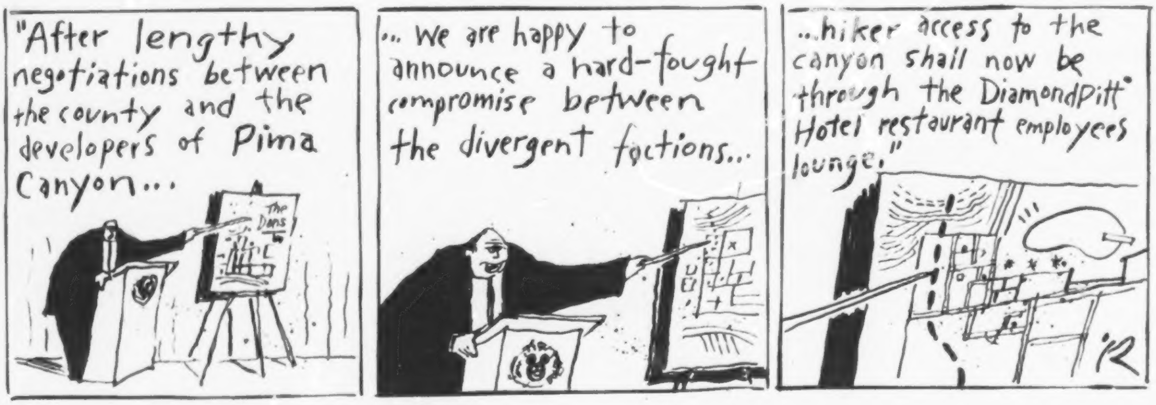
Geographers cautiously trace the origins of restructuring to the mid-1960s. This period marks the early stages of the demise of Henry Ford's widely imitated model of an integrated mass production process in which a product, such as an automobile, was designed, engineered, assembled, tested, and marketed under one roof. Fordism, initiated during the second decade of the twentieth century, was aided by government policies influenced by theories of the liberal economist John Maynard Keynes (Hall 1989). These Keynesian policies were directed at stimulating mass consumption in order to maintain demand for mass produced goods, like automobiles, refrigerators, radios and televisions at levels sufficient to absorb steady growth in the productive output (Harvey 1989).

Between 1966 and 1973, however, Fordist production techniques and Keynesian economic policies appeared increasingly unable to deal with the problems of civil unrest, inflation, recession, and the deflation of the dollar. The exacerbating effects of the oil shock to the sharp recession of 1973 ultimately undermined the Fordist-Keynesian political and economic connections. To recover from these crises, a new economic regime had to be devised, one that would overcome the intrinsic rigidity of Fordism with its heavy reliance on placing the majority of its fixed capital inputs, manufacturing plants, office facilities and research labs, in a few locations. Recently, this Fordist production practice has begun to be replaced with a radically different, more flexible form of production, making it easier to target stratified and geographically-clustered markets (Knox and Agnew 1989). Over the last two decades the vertical integration of Fordist manufacturing techniques has been disassembled, spatially dispersing the elements of production, from research and development to final assembly. Assembly operations are often exported to countries with low labor costs, while research and development activities remain in the United States (Piore and Sable 1984).

In the 1970s and 1980s, extensive economic, political, and spatial restructuring accommodated this more flexible production process. National, state, and local governments have retrenched from their previous Keynesian policies directed at stimulating consumer demand and have encouraged new forms of corporate and business growth through tax breaks and other incentives (Elkin 1987). Restructuring processes proceed quite differently in different regions and urban places, however. The history, population composition, and key government and business actors of American cities vary from place to place, so the impact of restructuring on an urban landscape and the people who live there also varies (Fainstein et al. 1983). Local government bureaucracies, land development interests, local corporations and small business groups, and private citizen groups all play a role in mediating the effects of restructuring in a particular place (Elkin 1987).

For example, restructuring in Sunbelt cities has meant expanding tax bases and new economic opportunities, but in some places, such as Tucson (Marston 1991), San Antonio (Plotkin 1987), and El Paso (Marston and Towers 1992), communities have resisted physical changes attached to rapid

FIGURE 1


"After lengthy negotiations between the county and the developers of Pima Canyon...
... We are happy to announce a hard-fought compromise between the divergent factions...
...hiker access to the canyon shall now be through the DiamondPitt Hotel restaurant employees lounge."
The Dons
R

Courtesy, Rand Carlson

growth. In Tucson, growth was at first applauded by the (then) relatively small community, but as the impacts of growth disturbed some of the basic elements of everyday life through increased traffic, noise and air pollution, demolition of historic neighborhoods and destruction of the fragile desert environment, citizens raised objections to growth and restructuring.

Global Restructuring and the Politics of Place

In the 1930s, the federal government put the small city of Tucson, with a population of about 30,000 people, on the path to rapid growth via New Deal programs. By upgrading and expanding the municipal airport and then converting it to a military installation during the Second World War, government investment in Davis-Monthan Air Force Base helped attract defense contracting and related manufacturing that increased employment and physical development of the city (Luckingham 1982). While federal government involvement has been a stimulus (Noyelle and Stanback 1984), nondefense-related government and non-profit activities have also fostered post-war growth in Tucson. At the county and city level, for instance, government has responded to the demand for services by increasing spending on public education, health care, and infrastructural development. The expansion of the University of Arizona over the last four decades has made it the largest civilian employer in the metropolitan area. Finally, Tucson's rapid growth has also been predicated on increases in the disposable income of its local citizens and in the spending of affluent winter visitors. Employment in retail trade and in the hotel and lodging services has grown steadily since the 1960s.

Between the war years and the present, Tucson's population has expanded from roughly 42,500 in 1930 to nearly 604,000, according to the 1990 United States census figures. In 1930, Tucson was a small town of 7 square miles with ranches and an Indian reservation ringing the city limits. In 1991, it is a classic sprawling Sunbelt metropolitan planning area of over 500 square miles (George 1991). An important factor in the rise of citizen activism concerning growth has been the low density development of the city, with a ratio of vacant to total land over four times the national median (Mann 1984).

The Neighborhoods Strike Back

During the three decades following the end of the war, business and civic elites, especially bankers, car dealers, and land developers who were backed by the local media and powerful public utility companies, determined the political and economic direction of the Tucson basin. Over the last decade and a half, however, private citizens in the Tucson metropolitan area have been reluctant to leave the business of growth to business. These citizens have organized to influence the pace, direction, and impacts of restructuring, challenging the more extreme impacts of rapid growth and change.

The present practices of neighborhood organizing have roots in the federal programs designed to curb

1960s civil unrest (Marston 1991). "Citizen action programs" were part of the War on Poverty and were developed in cities across the country. Their objective was to provide funding and training to impoverished neighborhoods and to help people help themselves to improve their living conditions and life chances. Poor people learned to make the system work for them through improved educational, health care, employment, and other opportunities. Most importantly, these people learned how to organize politically in order to make their needs known. By the late 1970s, most of the federal programs aimed at neighborhoods had been terminated, but their creation set a pattern for continued neighborhood activism. In Tucson, the city assumed responsibility for the initially federally-created agency and neighborhood activism has grown steadily not only in the city but also in the unincorporated area of Pima County surrounding Tucson.

Increases in neighborhood activism coincided with the accelerated growth. Citizen opposition to growth has revolved around contests over the use value and the exchange value of land (Logan and Molotch 1987). The use value of land reflects the sentimental, emotional, and even spiritual attachment that individuals feel for their homes, neighborhoods, and places of work and recreation. The exchange value of land embodies its monetary worth or the price that is determined by the operations of the real estate market. A cartoon appearing in the local weekly newspaper illustrates the way in which Tucsonans recognize, at least implicitly, this tension and the absurd compromises that are made in concession to it (see Figure 1). Much neighborhood activism has been concerned with issues ranging from the protection of homes from the encroachment of noisy and dangerous developments such as wider thoroughfares or an excess of community social service facilities like half-way houses for former drug abusers, to protecting the area's unique cultural and environmental legacy from real estate development. Land use and transportation are the two most prominent issues (Marston and Meadows 1988). Neighborhood newsletters have shown these issues to be frequent occurrences, of extended duration and at the very heart of the tension between the market value of property and the specific meaning residents attach to a place. Land use and transportation changes are attempts to enhance economic growth, but they simultaneously overturn local routines of psychic and emotional attachment. Residents, particularly homeowners, find it particularly difficult to separate use values from exchange values. As urban scholars John Logan and Harvey Molotch point out, "the neighborhood is the meeting place of the two forces, where each resident faces the challenge of making a life on a real estate commodity" (1987, 99). In neighborhoods, the structural transformations of a market-driven global economy and the sentimental content of every day life come together.

Some Concluding Remarks

Neighborhoods in the Tucson metropolitan area have been active in attempting to defend the area from some of the most extreme manifestations of restructuring. Many neighborhoods throughout the United States have waged defensive and offensive skirmishes against "the growth machine," the economic and political forces that coalesce around the promotion of growth (Molotch 1976).

In Tucson, the demands of neighborhood organizations have not gone unheeded by local political officials. The 1987 elections witnessed the election of a neighborhood candidate to the mayor's office. In addition, following the 1989 election, the city council has a majority of members sympathetic to the neighborhood issues. Neighborhoods have effected policy changes that allow greater citizen participation in the planning of roads, the creation of scenic corridors and noise ordinances, and the development of land use plans. In short, the impacts of global economic restructuring have been directly felt in Tucson and citizens there have attempted to moderate the most extreme ones. In places as different as San Francisco (Mollenkopf 1983) and San Antonio (Plotkin 1987) local political arrangements have been fundamentally altered through the pressure of community groups demanding more direct access to the policies and land use regulations that affect them.

Restructuring has had profound impacts. At the global level, countries such as Korea that several decades ago were largely agriculturally based have emerged as competitors to the dominant American manufacturing giant. At the same time, American workers are less likely to be involved in manufacturing and are now more commonly employed in service and service-related activities as many American manufacturers conduct their production activities abroad (Knox and Agnew 1989). Over the past two decades, the radical changes in production technology, industrial organization, and public and private modes of economic management have profoundly transformed American cities and regions. A latter day Rip van Winkle who went to sleep in 1970 and was awakened in 1990 would find it hard to believe that the middle Atlantic and midwestern industrial heartland of the United States is casually referred to as the "rustbelt" while the once sleepy South and Southwest is the site of growth and development.

These outcomes of global restructuring forces affect all of us. One obvious place to explore this change is right in our own backyards, where the terrain is most familiar. For some, the changes are unmistakable, as the daily landscapes of our childhood have been altered so dramatically as to be unrecognizable. Chrissie Hynde of the rock group The Pretenders refers to her hometown of Akron, Ohio, in this way: "I went back to my city, and my city was gone." For others, the changes may be more subtle though no less disorienting. What happens in the seemingly remote and abstract realm of global phenomena affects us all, where we live, work, shop, and play. Some are more dramatically affected than others, of course, but we all feel the ripple effects of global transformations at the local level.

A geographic perspective, exposing the links among these levels, reveals how as individuals we are complicit in, and affected by, the actions and events that seem to occur beyond our daily lives. By rediscovering our neighborhoods, we can begin to shed light on where we, as members of a world community, fit in the wider scheme of things. It can help us, as William Blake more eloquently stated, "To See a World in a Grain of Sand."

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Tucson Neighborhoods: A Learning Activity To Accompany *The World In A Grain Of Sand*

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Introduction:

The five themes of geography -- location, place, human-environment interactions, movement, and regions -- are often difficult for a student to grasp on a regional scale. They are more accessible when one focuses on one's community, its history, architecture, and development within a hierarchy of urban places. Teaching the five themes in this context, the teacher can use current events and issues "close to home" to enrich and enliven a student's interest and understanding of vital issues confronting his or her city.

The goal of this unit is to emphasize the historical and contemporary geographic linkage between community structure and changes in the national and global economies, using Tucson, Arizona, as a case study. The lesson is readily adapted to other metropolitan areas, but we should expect different local issues in different places. This goal follows directly the theme of the essay "The World in a Grain of Sand."

Grade Level: Grades 7 to 12.

Time Required:

The entire set of activities can be used in a three week period, but individual lessons can be used alone. They range from one to five class periods.

Objectives: Upon completion of this learning activity, students will be able to:

A. Describe Tucson's location with respect to natural resources, transportation links, and labor pools.
B. Explain Tucson's growth as an urban place.
C. Describe Tucson's architecture as an expression of place resulting from its ethnic heritages.
D. Discuss the historical impacts of global changes on Tucson.
E. Describe their own neighborhoods and issues faced by neighborhoods in relation to economic growth.

Background on Tucson's History and Geography:

Tucson began as a frontier outpost of northern New Spain in 1775 when the Spanish viceroy decided to build a chain of presidios (forts) across its northern section to better defend against the possible encroachment of Russian settlers and fur trappers who had established a foothold in California. The community of San Augustin de Tucson subsequently went through five stages of development. The first stage was development of a Spanish settlement of soldiers and ranchers. The second stage was growth of the Hispanic community in *barrios* (neighborhoods) following Mexico's independence from Spain in 1821. The third stage saw the arrival of the Anglos following the Gadsden Purchase in 1856, a purchase of land south of the Gila River to the present border with Mexico in order to provide for an all-weather route for a transcontinental railroad. This period can be divided into the period before 1880 when a few Anglos, mostly males, were present in an Anglo-Hispanic community, and the period after 1880 when the railroad reached Tucson and large numbers of Anglos from the East arrived. The fourth stage coincided with World War II and the Cold War that followed. Major United States Air Force bases were built throughout the Southwest to take advantage of favorable flying weather. This brought large numbers of people to Tucson. Many returned following the war and took up permanent residence. Tucson began to develop rapidly in the 1950s, with its population growth rate accelerating every decade subsequently. The fifth stage corresponds to the restructuring of Tucson's economy after the failure of the copper and cattle industries. These are two of the "three C's" on which Arizona's economy was based: copper, cattle, and cotton. Tucson's business community began to look more to tourism, particularly retirees with time and money to spend, destination resorts, and service industries to fuel its economy.

As patterns of work were altered, the community was restructured. As a Mexican town, Tucson had a cathedral (San Augustin) facing onto the plaza (la Placita Mesilla). Businesses surrounded the plaza and neighborhoods (barrios) extended along the streets leading off the plaza. The houses were Sonoran-style adobes set directly on the street with thick mud brick walls, deep-set doorways, narrow windows, and flat roofs. The doorway led into a patio where all social activity took place. In most respects, Tucson was a typical Mexican border town of the sort that can still be seen in Mexico today. Remnants of this neighborhood plan can still be seen south of downtown in Barrio Libre and Barrio El Hoyo. While there was a perception of "women's work" and "men's work," the shortage of labor on the frontier dictated that women work alongside men in many activities.

Following the arrival of the railroad in 1880, Anglo influences in architecture, culture, and economic enterprise of the Gilded Age began to predominate. As Tucson grew geographically, the suburban neighborhoods of Armory Park, El Presidio, Iron Horse, Pie Allen, University West, and Sam Hughes grew up around the town center, at first within carriage or street car distance. Certain cultural and economic assumptions dominated the planning of these neighborhoods, which gave them specific spatial characteristics. Houses began to be constructed of brick and wood, made more available by the railroad link to California. Houses were placed in the middle of the lot and were faced with broad, deep porches facing the street. Housing styles were modifications of eastern houses of the age, and older Sonoran style houses were "upgraded" with pitched roofs, porches and enlarged windows. This gave rise to such styles as Transitional and Transformed Sonoran, and Anglo Territorial.

The lingering effects of the Eastern "Cult of Domesticity" dictated that neighborhoods provide educational and consumer services within walking distance for the convenience of the wives and children who spent most of their daily lives in them and that husbands' work places be located elsewhere. Later, with the widespread use of the automobile, neighborhoods became more distant, but still designed to satisfy a traditional domestic lifestyle.

During the current stage, neighborhood plans are barely distinguishable from those in the rest of the United States and old neighborhoods have been transformed to reflect the new American lifestyle. Stores and shops are located in malls and strip malls along the main roads, and work is clustered downtown, in business districts, or industrial parks. Neighborhoods are largely places where the family rests from the rigors of the outside world. Often husband and wife both hold a combination of full and/or part time jobs, children begin schooling with day care, and most activities that take place outside the home occur outside the neighborhood as well.

Yet the historical sense of a neighborhood as a community of families and a safe place to raise and educate children remains active in people's consciousness. As people feel threatened and unable to control the global forces that increasingly shape their lives, neighborhoods are seen also as a refuge from the world at large. Local, state, national and global changes, that affect the hoped for security and sanctity that neighborhoods seem to offer, are resisted in the name of integrity of the neighborhood or coalition of neighborhoods. People are concerned with the loss of a sense of the uniqueness of the desert environment and of the city's historic character as it is paved and bulldozed to provide houses, golf courses, and resorts of dubious necessity. Problems of hazardous waste disposal and the homeless trouble Tucsonans as they trouble Americans generally.

The Learning Activity

Lesson One (1 to 2 class sessions)

1. Have students locate Tucson (or your city) in the contemporary hierarchy of urban places in the Southwest (or your region). Discussion questions may also be adapted to other cities.
2. What is Tucson's size relative to Los Angeles, Phoenix, Casa Grande, or Wilcox? If you lived in Wilcox where would your family go to buy major appliances? If you wanted to hear a major rock group where would expect them to play in Arizona?

Enrichment:

1. Have students do exercises in cooperative groups using the material in Peterson and Saarinen, "Local Symbols and Sense of Place." (See references.)
2. Have students read about urban places in any suitable geography textbook.

Lesson Two (5 class sessions)

1. Develop the concept of neighborhood as a multiple reality. (A good introduction to this activity is Hardwick and Holtgrieve 261-264).
2. Set the stage for the study of Tucson (or your city) either through assigned readings, a lecture, or a combination of readings and discussion.
   a. Point out the characteristics of location, place, human-environment interactions, movement, and region that Tucson's history demonstrates.
   b. Describe a neighborhood as having the characteristics of the five themes: it is a region, it has location, a sense of place, movement, and human-environment interactions.
   c. Have students sketch maps of their own neighborhoods. Ask them to relate the neighborhoods to the Five themes.

Enrichment:

1. Using maps and census data, students will make area-value (choropleth) maps showing the location of Tucson's historic barrios and today's ethnic distribution. They may compare their findings with historical maps of Tucson's neighborhoods. (See maps, pp. 166-169?)
2. If time and money allow, take the students on a field trip. In Tucson, we visit historic neighborhoods and arrange for a tour of historic houses. Students are asked to take notes on information given them. They may also photograph or sketch anything they think will be of interest.
3. Assign students to research their neighborhoods over the weekend. Among the information required will be a map, a description of types of houses and their approximate age, building materials, landscaping, and so on. They should find out the name of their neighborhood association (if they have one), talk to its representative, and discover what issues the association has been concerned with during the past two to five years, and pick one major issue and write it up. (Issues may include conflicts over zoning, location of indigent service centers, development of nearby vacant lands, and so on).

Lesson Three **(2 class sessions)**

1. Map and describe neighborhoods.
   a. Provide a large city map and ask students to locate their neighborhoods and draw their boundaries.
   b. The class will discuss their neighborhoods as they discover them.
2. Ask the students whether their neighborhood fits the description of a traditional neighborhood, a neighborhood in transition, or a modern bedroom community.
   a. Ask the students how their neighborhoods are different.
   b. Ask the students to speculate on why their neighborhoods have changed. Have issues of global restructuring discussed in the essay "The World in a Grain of Sand" played a role in this change?
   c. Has there been any resistance to change in the neighborhood? (See the essay again).
3. Have the students speculate on how lifestyle shapes neighborhoods in different time periods. Students may have trouble because they are so close to their own cultural lifestyle that they have difficulty seeing and analyzing cultural factors separately from themselves.

   An interesting topic for discussion at this point is the way in which the spatial configuration of neighborhoods and work places have been constructed on patterns of gender roles, with women as wives living at home and raising the children, and men as husbands working in the city. As gender roles have changed over time, the spatial patterns that reflected one set of gender roles inhibit the smooth functioning of new roles.
4. Have students discuss some of the neighborhood issues they discovered in their research. Ask what these all seem to have in common. If the research was done well, the students will answer that they all had something to do with protecting neighborhoods against unwanted changes.
   a. Prepare a scrapbook of clippings on neighborhood issues collected by your school librarian (the vertical file) or at the local newspaper's library.
   b. Discuss the actors in the issue and what their positions might be: neighborhood activists, developers, city and county officials.
   c. Relate these issues back to the kinds of socioeconomic forces that restructured neighborhoods, from Mexican to traditional Anglo to modern suburban. Try to show how people have defined a neighborhood as a place; discuss how neighborhoods can be seen as regions that sometimes form alliances with one another around common causes; distinguish between use value and exchange value as one source of conflict.

Enrichment:

1. You may want to invite a guest speaker to discuss aspects of the city's growth. Possible speakers are graduate students in regional development, neighborhood activists and/or historic preservationists, members of the city or county planning departments, and members of local governing bodies.
2. Engage the students in a simulation. You can create a simulation from a real issue that is currently in the news, or you can adapt the "Rails to Trails" simulation cited in the bibliography.
3. A culminating activity will be for students to write an essay on one of the following:
   a. the spatial characteristics of Tucson (or your city) and its neighborhoods over time
   b. historic architecture and how it reflects a changing sense of place

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Media and Human Resources:

"From Pithouse to Pueblo," Filmstrip developed by the Junior League of Tucson. Distributed by the Arizona Historical Society.

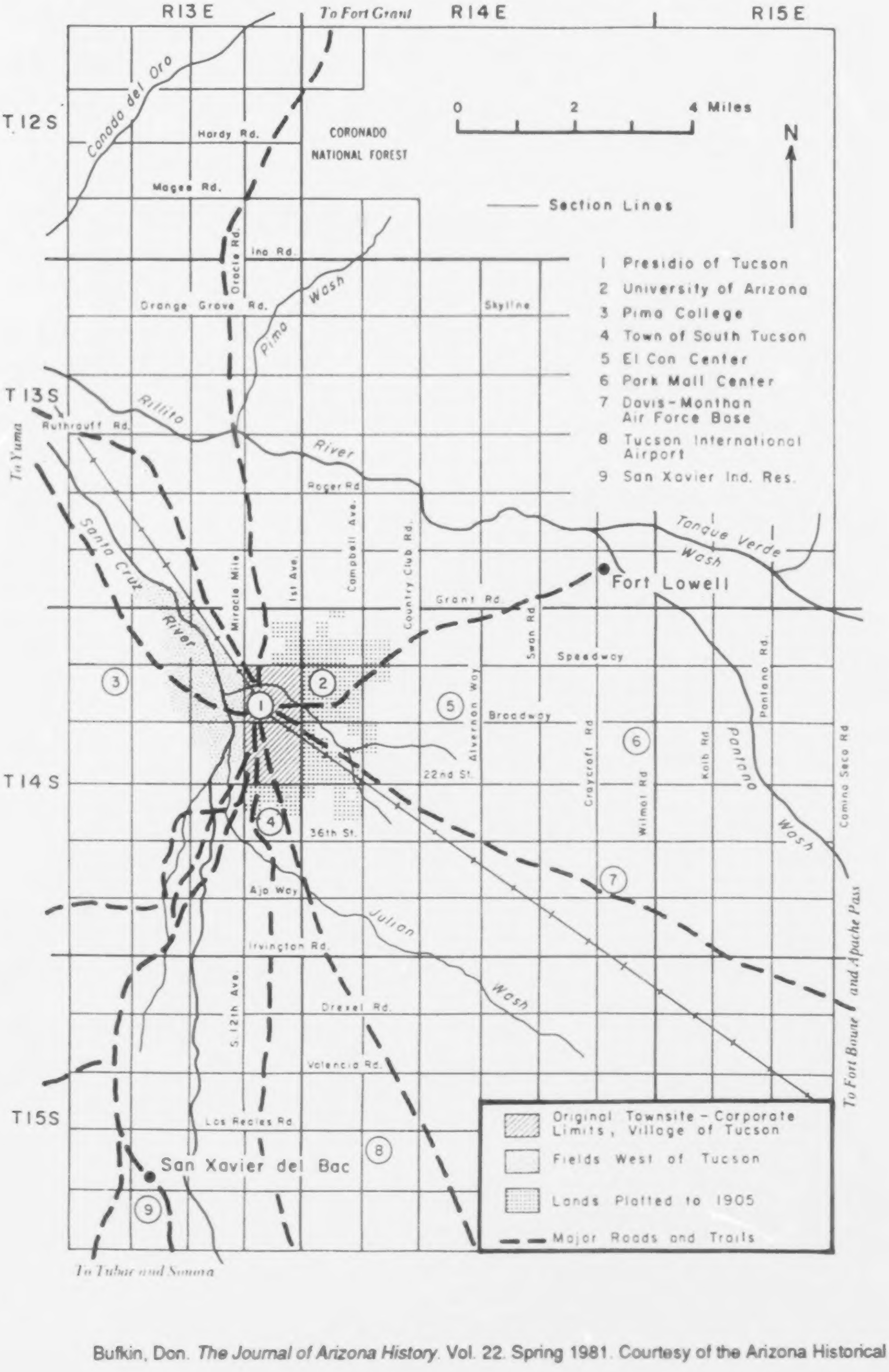
Guest speakers as available as time permits from University of Arizona, Department of Geography and Regional Development, Tucson Coalition of Neighborhood Associations, and Pima County or Tucson City Planning Departments.

Historic maps and photos of Tucson are available from the Arizona Historical Society, Tucson.

Tucson Museum of Art makes docent tours of historic buildings available by appointment.

MAP 1

TUCSON & VICINITY: 1872-1905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To Fort Grant
R14E
R15E
T12S
T13S
T14S
T15S
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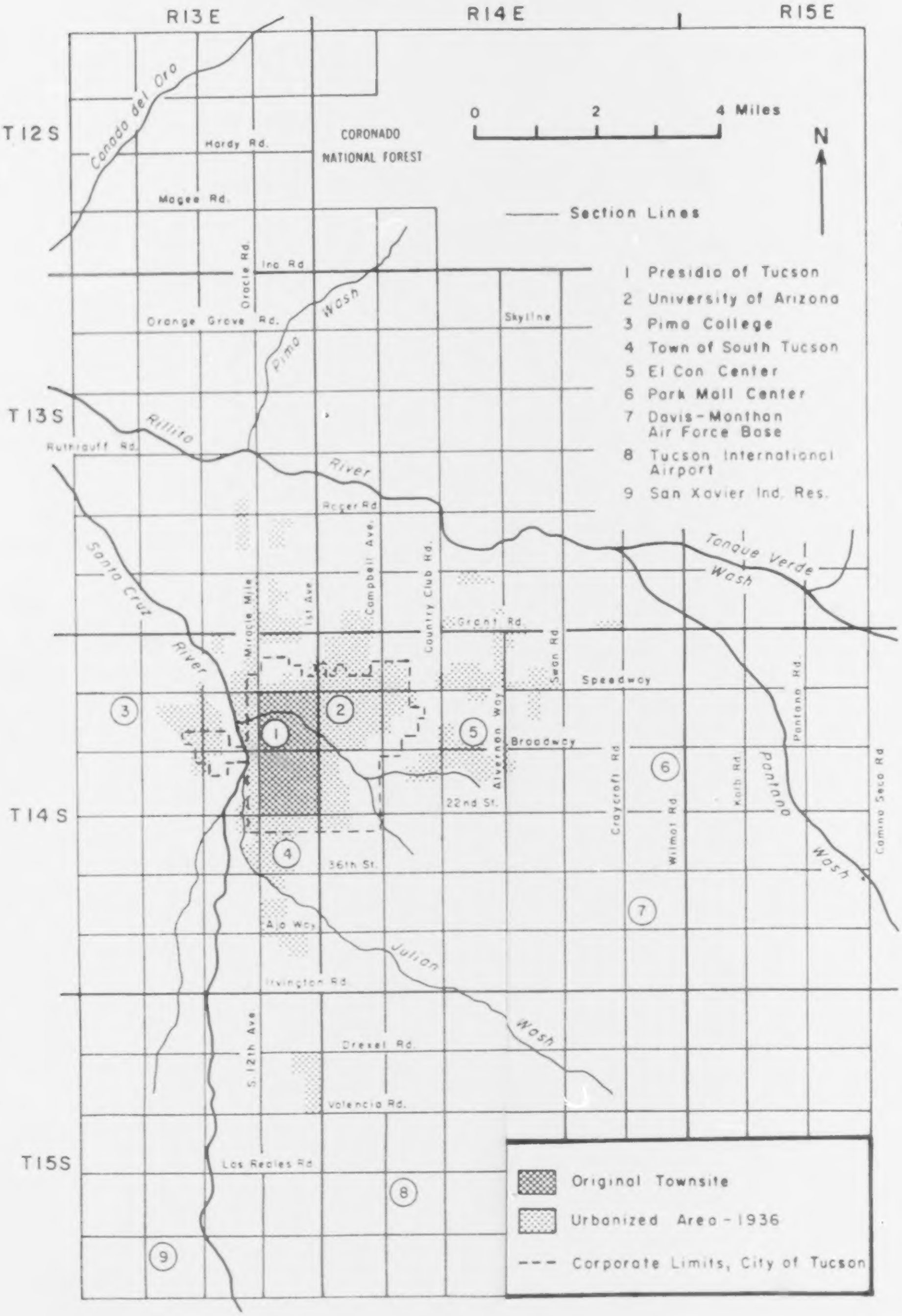
N
Section Lines
1 Presidio of Tucson
2 University of Arizona
3 Pima College
4 Town of South Tucson
5 El Con Center
6 Park Mall Center
7 Davis-Monthan Air Force Base
8 Tucson International Airport
9 San Xavier Ind. Res.
Canada del Oro
Hardy Rd.
Magee Rd.
CORONADO NATIONAL FOREST
Ina Rd.
Oracle Rd.
Orange Grove Rd.
Pima Wash
Skyline
Rillito River
Ruthrauff Rd.
To Yuma
Roger Rd
Santa Cruz River
Miracle Mile
1st Ave.
Campbell Ave.
Country Club Rd.
Tanque Verde Wash
Fort Lowell
Grant Rd.
Swan Rd
Speedway
Alvernon Way
Broadway
22nd St.
Craycroft Rd
Wilmot Rd
Kolb Rd
Pantano Rd.
Pantano Wash
Camino Seco Rd
36th St.
Ajo Way
Julian Wash
Irvington Rd.
S. 12th Ave.
Drexel Rd.
Valencia Rd.
Los Reales Rd
San Xavier del Bac
To Fort Bowie and Apache Pass
To Tubac and Sonora
Original Townsite - Corporate Limits, Village of Tucson
Fields West of Tucson
Lands Platted to 1905
Major Roads and Trails

Bufkin, Don. *The Journal of Arizona History*. Vol. 22. Spring 1981. Courtesy of the Arizona Historical Society.

MAP 2

TUCSON & VICINITY: 1936


R13E
R14E
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N
Section Lines
1 Presidio of Tucson
2 University of Arizona
3 Pima College
4 Town of South Tucson
5 El Con Center
6 Park Mall Center
7 Davis-Monthan Air Force Base
8 Tucson International Airport
9 San Xavier Ind. Res.
CORONADO NATIONAL FOREST
Canada del Oro
Hardy Rd.
Magee Rd.
Ina Rd.
Oracle Rd.
Orange Grove Rd.
Pima Wash
Skyline
Rillito River
Ruthrauff Rd.
Roger Rd.
Santa Cruz River
Tanque Verde Wash
Miracle Mile
1st Ave.
Campbell Ave.
Country Club Rd.
Grant Rd.
Swan Rd.
Speedway
Alvernon Way
Broadway
22nd St.
Craycroft Rd.
Wilmot Rd.
Kolb Rd.
Pantano Rd.
Pantano Wash
Camino Seco Rd.
36th St.
Ajo Way
Julian Wash
Irvington Rd.
S. 12th Ave.
Drexel Rd.
Valencia Rd.
Los Reales Rd.
Original Townsite
Urbanized Area - 1936
Corporate Limits, City of Tucson

Bufkin, Don. *The Journal of Arizona History*. Vd. 22. Spring 1981. Courtesy of the Arizona Historical Society.

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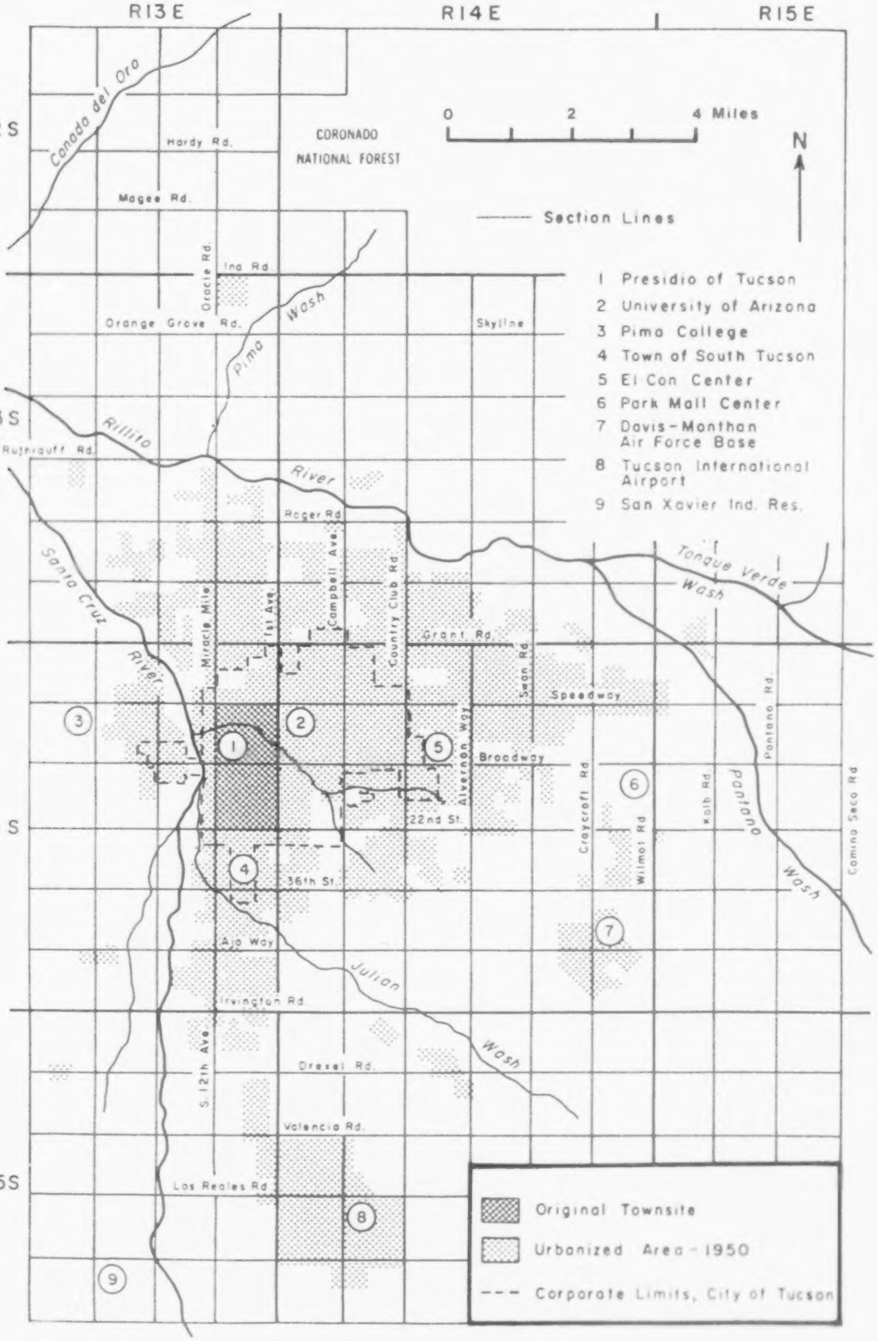
MAP 3

TUCSON & VICINITY: 1950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CORONADO NATIONAL FOREST
Section Lines
1 Presidio of Tucson
2 University of Arizona
3 Pima College
4 Town of South Tucson
5 El Con Center
6 Park Mall Center
7 Davis-Monthan Air Force Base
8 Tucson International Airport
9 San Xavier Ind. Res.
Canada del Oro
Hardy Rd.
Magee Rd.
Ina Rd.
Oracle Rd.
Orange Grove Rd.
Pima Wash
Skyline
Rillito
Ruthrauff Rd.
River
Roger Rd.
Santa Cruz River
Miracle Mile
1st Ave.
Campbell Ave.
Country Club Rd.
Tanque Verde Wash
Grant Rd.
Swan Rd.
Speedway
Broadway
Alvernon Way
22nd St.
Craycroft Rd.
Wilmot Rd.
Kolb Rd.
Pantano Rd.
Pantano Wash
Camino Seco Rd.
36th St.
Ajo Way
Julian Wash
Irvington Rd.
Drexel Rd.
S. 12th Ave.
Valencia Rd.
Los Reales Rd.
Original Townsite
Urbanized Area - 1950
Corporate Limits, City of Tucson

Bufkin, Don. *The Journal of Arizona History*. Vol. 22. Spring 1981. Courtesy of the Arizona Historical Society.

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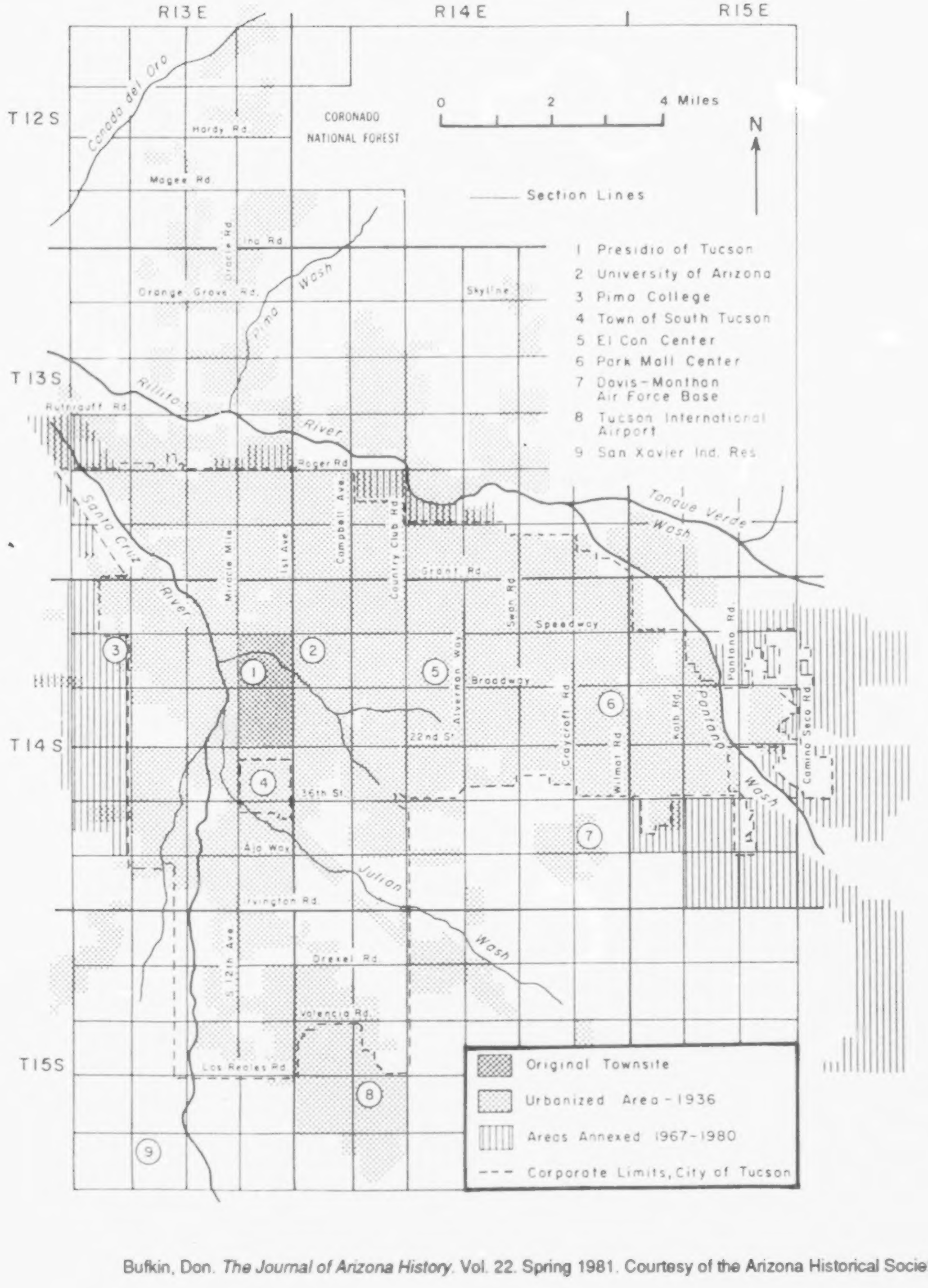
MAP 4

TUCSON & VICINITY: 1967


R13E
R14E
R15E
T12S
T13S
T14S
T15S
Canada del Oro
Hardy Rd.
Magee Rd.
CORONADO NATIONAL FOREST
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2
4 Miles
N
Section Lines
Ina Rd.
Oracle Rd.
Orange Grove Rd.
Pima Wash
Skyline
1 Presidio of Tucson
2 University of Arizona
3 Pima College
4 Town of South Tucson
5 El Con Center
6 Park Mall Center
7 Davis-Monthan Air Force Base
8 Tucson International Airport
9 San Xavier Ind. Res.
Rillito River
Rutrauff Rd.
Roger Rd.
Santa Cruz River
Tanque Verde Wash
Miracle Mile
1st Ave.
Campbell Ave.
Country Club Rd.
Grant Rd.
Swan Rd.
Speedway
Pantano Rd.
Alvernon Way
Broadway
Craycroft Rd.
Wilmot Rd.
Kolb Rd.
Pantano Wash
Camino Seco Rd.
22nd St.
36th St.
Ajo Way
Julian Wash
Irvington Rd.
S. 12th Ave.
Drexel Rd.
Valencia Rd.
Los Reales Rd.
Original Townsite
Urbanized Area - 1936
Areas Annexed 1967-1980
Corporate Limits, City of Tucson

Bufkin, Don. *The Journal of Arizona History*. Vol. 22. Spring 1981. Courtesy of the Arizona Historical Society.

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IV. Contemporary Cultures

Reading The City Landscape As A Primary Document

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One of the characteristic aspects of a teacher's special interests is an affection for primary documents. There is an excitement in the reading and analysis of these foundation pieces of history and discovery. This thrill is derived not just from the reading of the work, but from knowing that you are reading it first, without the filter of another person's explanation. This article speaks to this same excitement but focuses upon a primary document that is seldom given the significant role that it deserves. The document is the landscape; specifically, the city landscape.

The cultural landscape -- that is, the landscape that has been modified and transformed by human action -- is the oldest primary document in our possession. It serves as a document because it has been created through a symbol system, through conscious and inadvertent human modification, and through a combination of technology, economics, aesthetics and myriad other human influences. As such it is, indeed, worthy of reading and analysis.

The range of scenes that are expressed within the cultural landscape extend from introduced weeds growing beside a forest path to a grass meadow that has had its forest cover removed by periodic fires and across the continuum of human landscape change to an urban canyon in the midst of a central business district. Along that continuum, every effort humankind has made to create a more satisfying, more productive, more artistic and more idiosyncratic landscape shows up as documentary evidence of humankind's insatiable interest in making the world over in its image.

What is a geographer's perspective on reading this landscape document in its most intense expression? What is the significance of the cultural landscape of the city?

The City Landscape

The landscape that has more documentary evidence than any other is the city landscape. From the subterranean utilities, foundations, basements and parking garages ascending up to the leveled land with its capstones of macadam, concrete and introduced turf, ascending still further to the vertical expressions of dwelling, business, warehousing, industry, advertisement, religion and status virtually every square foot of land has been marked by the hand of Humans, The Greatest Builders.

It is in this urban domain that society allows comparatively more individuality and more idiosyncracy in the creation of the artificial landscapes. In contrast, in the village world that acts as home to fundamentally rural and traditional peoples, outlandish (think of that adjective's meaning) dwellings can be the cause of censure and exclusion. Even in small towns there is a social price to pay for most people when they create highly unusual landscapes through house color, mailboxes, even gardens --especially if they are not particularly wealthy and have already been noted for conspicuous consumption.

In the city, however, the social role of the landscape as an extension of strange and unusual personalities is more widely accepted. This quality of landscape heterogeneity has emerged as a landmark of the city in almost all cultures. The marketplaces, the ghettos, the Chinatowns, Little Tokyos, Greektowns, the warehouse-zone-turned-art-districts...all of these landscapes add to the flavor and personality of the city. This same range of landscape variety in a small town is not only unlikely, it is generally unwelcome.

Change and the City Scene

One of the reasons that reading the document of the city landscape is so interesting is that its pages turn so quickly. Every settlement form other than the city, that is, the farmstead, hamlet, village and the small town, to name the most significant ones, has been designed and built around attention to continuity. In those other landscapes, the past is writ large in the present, for generations have had a spatial and stylistic stability. Before the city became an alternative settlement, the goal of most children was to grow into a world in which they could replicate the patterns (social as well as spatial) of their antecedents. The city changed all of that.

The city landscape became the billboard for innovation, for experimentation, for landscape creations that responded to new demands for density, productivity, accommodation, and for imagebuilding. It is in these leaves of the document that the social studies teacher, the student and the geographer can find excitement in reading. As a geographer, let me assure you that a great many geographic clues are there in the city in primary form, awaiting curiosity and a willingness to speculate.

OSAE, Can You See?

A simple strategy for reading this document, the city, lies within this simple question: Oh, Say Can You See? Or, more accurately, **O S A E, Can You See?** The four letters stand for Observation; Speculation; Analysis; and Evaluation. Let me outline their general utility and then take them, and you, to a city landscape...to the primary document.

Observation is the first step in the exploration of any primary document. For a geographer, observation simply means the careful and thorough visual analysis of the scene before you. Whether looking through a car window, out of a hotel window, from the rooftop observation deck of a skyscraper, or from a corner cafe, the first burden for any viewer is making order of the elements of the landscape. Begin with the obvious, then work toward a more complete picture of all that lies within the spatial framework you are studying. Any thoughtful understanding of a scene has to begin with the questions: What can be seen here?

Speculation is the next logical step, although too often formal systems of education attempt to dissuade a learner from "mere speculation." Speculation is the leap of logic you make when you have some elements of a visual equation in your mind, but you cannot reach additional, essential components. In this sequence, you look at the elements that encompass your Observation data and try to make sense of what you see. Why is this here? What caused people to create this particular view, this particular landscape?

Analysis is the next logical intellectual step in this process of reading the document of the city landscape. With Observation and Speculation, you can begin to put together the pieces of the puzzle of creation and utility of the city scene being explored. There are, however, major elements such as dates, builders, exotic influences, changing occupance and occupants and many other players. Analysis -- or this step may be defined as Answers that the student needs to determine in order to fortify his or her speculation -- is the act of going to the library and to local sources in order to get answers to questions that come from the Speculation process.

Evaluation is the final step in this quartet. When the geographer has attempted to see what he or she can see and understand in a city scene through the first three steps, then the socially responsible observer gives some thought to "How well does this scene work in this setting?" This is Evaluation in the sense that all landscape analysis questions ultimately lead one to question: Does this modification work? For whom? How could this landscape be used more productively, or more equitably?

Think about these somewhat abstract terms in the context of a scene. Consider yourself on a bluff overlooking the late afternoon vision of a substantial city in the distance. Ask yourself, "OSAE, Can you see?" In your Observation, you can see the whole horizon centered on the city. In the middle of your vision you see the tallest buildings rising up from a low stratum of two- and three-story buildings (or higher) that occupy the center of the plain. You can observe a classic peak with almost parallel dropoffs to all sides.

You can also see the bands of roadway that are filled with cars making their way out of the city, while lanes going into the center are much less congested. A careful observer can peel away layers of transportation, physical landscape and adjacent economic land uses that predate the contemporary city scene.

If you can imagine yourself making your Observation at a much closer scale, you could stand at a corner right in the middle of the city and see the downward flow of people from the towers, moving quickly to gain a mythical five minute gain on their competition for the freeway lanes home. With a little walking in this setting you would be able to observe how different a place there is just three blocks away, among the more squat buildings that you saw from the bluff.

This Observation leads to the Speculation about how it can be that one part of the central city is upscale, crowded, high-status, highrise and enormously expensive, while only a five minute walk away, you can see older and less prestigious buildings that still look solid and, in fact, seem to bespeak an elegance that was probably quite remarkable some decades ago. What leads to this critical social difference in such a tight spatial scale? Bringing your forces of Observation into play again in this off-center part of the downtown grid, you note that the second floors -- in fact, all floors above the first floor, it seems -- are vacant or have faded "For Lease" signs sitting crooked in the windows of the second and third floors.

Speculation leads to a consideration of stories you or the students with you have heard about this older part of downtown before the war ("What war?" a high school student asks). You all wonder if this quiet adjacent zone could ever have been the active, central zone that geographers call the "CBD -- Central Business District."

Or, take your Speculation mode to another part of the downtown and try to figure out what makes one street seem to be filled up with wig shops, pawn shops, a bus station and adult theaters while only two blocks away you have very fancy hotels and expensive shop windows showing jewelry and fine watches. How can these variant land uses occur in such proximity? Speculation leads to the guess that the rich part of the city might be moving toward this more rundown section. Or could it be the opposite?

Looking carefully at the scenes before you, you notice two large signs high on the facades of a pair of twelve story buildings. They say "The Highland Tower -- Shopping, Security, City Living. Now Leasing....Opening Fall 1992." Adjacent to these old buildings is a blacktop parking lot with chainlink fence halfway around it with another sign. "Hard Hat Area. No Visitors."

The message in this Observation and Speculation is that change is abroad in the city. Old functions are changing. New functions, or rather new spaces for traditional urban functions of finance, professional activity, retailing and active interaction, are coming to this older part of the city. What are the dynamics here? What is leading to this change?

Analysis is the third step, and that is what needs to be done to better understand these pages of the document of the city landscape. In every analysis there are questions that need to be answered: Who owns the land here? What have been the patterns of ownership, tenancy and abandonment of these areas? What older transportation systems used to feed workers and shoppers into this part of the city? Did there used to be buildings in the area where now there are just blacktop parking lots with small kiosks and rates that are $1.00 for twenty minutes? Who designed these middle sized buildings and when were they built? Who is behind the much bigger, more flashy towers that now stretch up into the gray sky?

The library is an historian's source for this Analysis. Perhaps an interview with members of a realty office that has been based in the city for a long time might also be helpful. Checking the Sanborn maps to chronicle the change of the retail functions of this part of the city through the past five or six decades helps to answer questions and verify or modify speculations. Senior citizens who have lived through these changes are also wonderful primary sources for helping students -- or anyone -- to read the city's historical geography.

Analysis is the mechanism to wed the informal reading of the city and the landscape document with the primary and secondary sources that await research questions and interest in the library. To cast Observation and Speculation toward the bibliographic tasks of library Analysis makes the best possible use of the first three elements of the OSAE quartet of field analysis for the geographer.

Evaluation is the fourth step in this process. In reading the city, any student of landscape should give time and thought to an Evaluation of specific landscapes. Is this a wise use of this parcel of land? Does this have environmental, social or economic merit? This step in the reading of the city is much less objective than the earlier steps (including Speculation) but it is productive of very stimulating discussions and landscape analysis. Just as in reading any primary document, the reader has the burden of making inferential judgements about the context of the time and the mindset of the author at the time of creation. In this city document, the influence of such phenomena manifest themselves in land use and landscape modification decisions. What did the "writer;" that is, the designer, the builder, the occupant, have in mind in the creation of this landscape? And, was that goal achieved; was that goal worthy; and how do those two questions bring the current observer to an Evaluation of this scene, this landscape?

This paradigm for Reading the City can work for any scale. You can use it productively in walking through a suburban neighborhood. It lends itself to intersections, monumental public buildings, shopping centers and to individual structures. The power of Observation and Speculation alone can lead to Evaluation if one is trying to bring the process to some preliminary conclusion. The Analysis step is, of course, essential for any thorough reading of this primary source, but context provides a great deal of information so that one level of this reading can be achieved in a day. A final field step in Analysis can also be the searching out of people who have been witness to the writing of the city landscape document. There are seniors, retailers, realtors, cops on the beat, and bankers who are almost always aware of and interested in this process of city landscape change and analysis. If you can capture them when they have a few free minutes, they often enjoy the role that allows them to talk about change in the years they have witnessed creation and change. A few phone calls can do a great deal to pave the way for such a session.

Conclusions

Like all reading, this process takes time, takes attention, and takes imagination. The lead step -- Observation -- is good education in absolutely all fields. For the geographer, it is absolutely vital. For others involved in education it can be just as important for it helps in putting the pieces to the puzzle on the table. Critical thinking and real learning all should make use of Speculation, for that process represents the stringing together of elements that may initially not appear to be linked. The speculative process fits and refits elements into a more unified and productive whole. Analysis (Answers) and Evaluation add strong additional intellectual and socially useful components to this model.

The city is ready for this right now with its new shopping centers, old Central Business Districts, gentrifying neighborhoods and tract developments that are not even completed. All of these landscapes and countless others stand ready to be read. This primary document is not sequestered in a Rare Book Room, but rather in a cultural landscape that stands open for reading. Pick a city; pick a day; pick some friends and go for a good read.

How To Read A City: A Learning Activity To Accompany *Reading The City Landscape As A Primary Document*

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Introduction:

The city can tell us much about ourselves, our past and our propensity for constant change. It is a document that should be read, and yet too often we do not take time to explore its story. This learning activity suggests ways for students to read a city using four geographic tools: observation, speculation, analysis and evaluation.

Grade Level: 7-12

Time Required:

Four class periods plus one day in the city and one half day in the local school neighborhood

Themes/Key Ideas:

Location: Location of places can be described using relative terms; location can be an analytical tool.

Place: Places have physical characteristics; places have human characteristics; places can be described in different ways.

Humans and Environments: People perceive the environment in different ways; people adapt to, or modify, the environment in different ways; technology results in changes in the environment.

Movement: Movement results in patterns; movement involves linkages.

Regions: Regions are ways to organize information; a region has common characteristics.

Geographical Concepts:

Absolute and relative location, exploration, mental map, site/situation, accessibility, assimilation, boundary, climate, culture, environmental perception, landscape, neighborhood, planning, sense of place, sequent occupance, urbanization, demographic transition, land use, personal space, diffusion, distance-decay, immigration, infrastructure, migration, network, spatial interaction, transportation, core area, concentric zones, culture, enclave, formal/functional, node-link, population, territoriality.

Objectives: Upon completion of this activity, students will:

Knowledge: Gain a geographic perspective concerning the city.

> "The city landscape became the billboard for innovation, for experimentation, for landscape creations that responded to new demands for density, productivity, accommodation, and for image-building. It is these leaves of the document (the city) that the geographer can find excitement in reading. As a geographer, let me assure you that they are there in primary form, awaiting curiosity and a willingness to speculate." (Salter, "How To Read a City," this volume.)

Skills:

A. Ask geographic questions ("where" and "why there")

B. Acquire geographic information through observation and obtaining data (field work, interviewing, questionnaires, statistical data)

C. Present geographic information (maps, interpretive oral and written reports)

D. Analyze geographic information (describing trends, interpreting maps)

E. Develop and test geographic generalizations (identifying relevant questions)

Attitudes/Values: Gain an appreciation of the city, its history, its problems and its opportunities

Materials:

Small field notebooks, pencils, colored pencils, identification badges, plastic overlays, overhead colored marking pens, overhead projector, slide projector, several cameras, a portable tape recorder, video camera (optional), VCR and VCR monitor (optional), poetry books from school library or English Department, as well as the suggested readings, Gerald Leinwand's *The City as a Community*, Italo Calvino's *Invisible Cities*, the article Kansas City--Missouri from Herbert S. Kates' *Minute Glimpses of American Cities*.

The Learning Activity

Background:

Sir Arthur Keith once said that city life is "the greatest of human experiments" (Kates, *Minute Glimpses of American Cities*). The city phenomenon is a fairly recent one, and not at all a natural one. Cities are profoundly conscious and artificial landscapes.

What caused the city to happen? How can we "read" the city? The answer is within our field of vision. "The cultural landscape -- that is, the landscape that has been modified and transformed by human action -- is the oldest primary document in our possession" (Salter, "How to Read a City"). Geography and history can be read in a cultural landscape: the city. The following activities are an outline for examining and exploring the city and perhaps, seeing it with new eyes: through a geographer's lenses.

Learning Strategies:

1. **Why the city?** Ask students this question. Have them brainstorm both contemporary attractions to the city and negative images that come to mind regarding cities. (Examples of possible student responses: attractions are job opportunities, cultural amenities, mix of people, health care, education, conveniences, social life, anonymity; negative images are crime, traffic, crowdedness, stress, competition, noise, pollution, loneliness).
2. **A Neighborhood Walk.** Spend an hour or so walking through the area around your school. Have students gather as much information as they can to give them an image of the neighborhood: the way

people live there, the things that make up its fabric, the things people share there, the pathways and patterns of the place, the boundaries that define it as a region. Any neighborhood has its own unique combination of factors that give it definition and its own sense of place. (Suggestion: Before taking students on a field walk, have them design name badges identifying them as members of a geography class from your school.)

3. **Treasure Hunt.** Identify something in the school neighborhood or in your local community/city that is:

open	soft	young	old
dead	lively	real	artificial
public	private	safe	dangerous
past	future	closed	hard
planned	accidental	recreational	commercial
industrial	residential	high	low
a barrier	crossable	temporary	permanent

4. **History.** Find pictures of your community/city that go back as far as possible (Sources might be local real estate offices, city hall, your public library, the local newspaper). Ask students to study the pictures following your walk. What do the pictures reveal about...

   -- the natural landscape?
   -- uses that are unchanged?
   -- native vegetation?
   -- transportation uses?
   -- changes in land use?
   -- demographic shifts?

   Invite long-time residents of the community/city to speak to and be interviewed by your students about their memories of the city. Tape record or videotape the speakers if possible.

5. **City Field Trip.** Take students on a field trip into a city neighborhood. Before hand, divide the class into **six field teams**, each with specific responsibilities for conducting surveys, mapping, interviewing, researching and observing. The following learning strategies (6-10) detail the tasks assigned to each of the six field teams. (Suggestion: Have students wear their identification badges and carry field notebooks and materials needed for their assigned field tasks.)

6. **Survey (Team 1).** Ask people around the field walk area what features in the environment they value, why they live there, and how long they have lived there. Team 1 should develop survey questions before the trip and record interview responses either in field notebooks or on preprinted survey sheets. (Examples of possible responses: trees, hills, beaches, agreeable climate, privacy, view, proximity to things, grew up there.)

7. **Mapping (Teams 2 and 3).** Assign teams to map the two sides of a block-long street. Each map should show:

   * paths: sidewalks, streets, alleys, boulevards, freeways, etc.
   * landmarks: schools, houses, stores, fire stations, bus stops, gas stations, markets, banks, churches, etc.
   * directions: north, south, east, west
   * landscaping: trees, gardens, parks, green spaces

8. **Research Streets and Sidewalks (Team 4).** Sometimes sidewalks, manhole covers, lamp posts and buildings have dates and names on them. Have Team 4 look for some historical signatures on the landscape during the city fieldwalk. What is the earliest date they can find? How did the streets get

their names? Who named them? (Answers may come from on-the-street interviews or follow-up research.)

9. **Window Survey (Team 5).** Survey things on your city fieldwalk that are signs of health and signs of decay. Encourage students to photograph or sketch samples of health and decay. For example, try counting the number of:

broken windows
grocery stores
healthy trees
street lights
beer cans
graffiti
sidewalk cracks
post offices
watch dogs
fresh paint areas
open windows
public telephones
gas stations
dying trees
street people
trash cans
light-post banners
new cars
recreation centers
trees
unpainted places
chairs on porches
police cars
parks
window bars
bus stops
broken bottles
urban gardens
abandoned cars
restaurants
people just hanging out
boarded-up windows
neighborhood watch signs
bus stops
green spaces
locks on doors
empty stores
street litter
pool halls
chain-link fences

Following the field walk, ask Team 5 to analyze their findings from their window survey. Ask the team to categorize each items counted as either a sign of health or of decay. Have them explain their answer. What kind of statement can they make about this area of the city from this exercise of counting?

10. **Interview (Team 6).** During your fieldwalk in the city, find local people who have lived and/or worked in the neighborhood for a long time. Ask:

* Is this place like it used to be?

* How is it different?

* What things are unchanged?

* Is it better or worse? Why?

* What did you like about the way it was?

* What do you like about it now?

* How long have you lived/worked in this neighborhood?

* Have you stayed continuously? Left and returned? Why?

* What defines this neighborhood as a unique region within the city?

Conclusion:

11. **Presentation of Findings (Teams 1-6).** Following your city field experience, have each team analyze, evaluate and present their findings. Encourage teams to illustrate their findings with slides, photographs, sketches, maps (as overhead projections), written surveys, taped interviews and historical printed materials gathered in the field.

Evaluative Methods:

Individual field notebooks, written summaries of team findings, photo or video essays, team presentations to the class, follow-up writing assignments.

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Alternative Strategies:

For special education students, supervised city exploration is a valuable skills-building activity. Learning to ride a city bus, negotiate a purchase in a store, cash a check and cross a street safely are essential life lessons which help these students to better understand how to deal with the city. And for the at-risk student this lesson offers an alternative approach to learning the skills of observation, speculation, analysis and evaluation.

Enrichment Activities:

1. **Imagining** (A Speculation Activity). Have the class sit in a quiet place with a good view of the school neighborhood. Ask students to imagine and write about what they would have seen from this spot...

   ...5 years ago.

   ...25 years ago.

   ...100 years ago.

   What about the future?

   ...in 5 years?

   ...in 25 years?

   ...in 100 years?

2. **Writing.** Ask students to review their observations, speculations, analyses and evaluations about their city and school community: its history, its problems and its opportunities. Have them use their field notes, maps, treasure hunt finds, interviews and surveys, photographs, sketches, taped interviews and imaginings to write about the city. This activity can be either a creative writing assignment or an evaluation method for determining student progress or mastery of the field activity objectives.

3. **The City as Poetry.** Take students to the school library to find poems that speak of cities. Ask students to model one of the poems or construct their own, drawing from their recently acquired sense of the city as a cultural landscape. (Suggestion: The first five lines of Carl Sandburg's poem, "Chicago," offers a model for writing about other cities).

4. **Readings.** Have students read two essays, "What is the lure of the city?" and "Why are people leaving the city?" (Leinwand, pp. 34-39 and pp. 46-53). Divide students into small discussion groups. Ask each group to analyze the readings and create two lists under the headings "Attractions" and "Negative Images." Ask each group to present their lists. Compile a final list of the students' findings. Compare

this list with the one students came up with in the initial learning strategy, "Why the city?" Are there differences? Similarities? Do they agree with the author's findings? Are there additional points they would add to the list as a result of their field experience in the city?

5. **City Memories.** Have students read the essay, "Cities and Memory" (Calvino, pp. 10-11). As a follow-up to your city fieldwalk, ask students to model the following passage from the essay as their own expression of the city as memory.

   The city, however, does not tell its past, but contains it like.........................., written in...................... .... every segment marked in turn with.............................. ....

6. **Reading an American City.** Read students the essay, "Kansas City--Missouri" (Kates, pp. 60-61). As they listen to the essay, have them listen for answers to the following geographic questions:

   - Where did Kansas get its name?
   - What role has the Missouri River played in the city's history?
   - Is it significant that the city is located near the geographic center of the United States (in 1933)? Explain why.

   Discuss the essay and their answers to the geographic questions. Then have students research developments that have taken place in Kansas City since 1933.

   - What industries have remained? Are there new businesses and new neighborhoods?
   - Does the river still play a significant role in the life of this city?
   - How has the map of Kansas changed since 1933?
   - From what you have learned about its past and present history, how do you "read" Kansas City? What is your sense of this place?

Steel Drums of Trinidad

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The origin of the steel drum in Trinidad and Tobago and its diffusion throughout the world is a recent story. In only 50 years, the pan, as it is commonly called, has moved from the poorest neighborhoods of Port-of-Spain to the concert stages of Europe and North America. Its evolution from a folk instrument to commercial production illustrates cultural diffusion and the persistence of cultural traits over time and space.

According to Trinidadian folklorists, pan was born in the slum districts of the country's capital, Port-of-Spain. These slums, East Dry River, Gonzales, Hell Yard, New Town, and others, are on the periphery of Trinidad's multi-ethnic society. Approximately 41 percent of Trinidad's population is black, 40 percent is East Indian, and 16 percent is of mixed ethnic heritage. Chinese and Lebanese immigrants and Europeans make up the remainder of the population.

Despite differences that are self-consciously nurtured by these ethnicities, many once-distinct cultural traits now enjoy nearly universal acceptance. For example, East Indian foods are part of the ordinary diet of most Trinidadians. Similarly, East Indians compose calypso, a musical form of Afro-Caribbean origin. *Whewhe*, a popular gambling game, came to the islands with the first wave of Chinese immigrants in the late nineteenth century. Rivalry and discrimination still exist, but mutual tolerance and acceptance is a source of national pride. The steel drum had its genesis in Carnival, one example of the cultural blending that brings together Trinidadians of every segment of society.

Carnival and the Origins of the Steel Drum

The pre-Lenten celebration of Carnival, a distinctive feature on Trinidad's cultural landscape, expresses island identity. Street parades and public dancing have been integral elements of the celebration since its inception. Early Carnival music employed African-derived drums and chants, perceived as threatening by English colonial administrators. After years of minor disturbances during Carnival, the Canboulay riots of 1881 prompted police authorities to outlaw the drums. Carnival musicians quickly adapted to this suppression and began using bamboo stems as percussive devices. The bamboo was cut during prescribed phases of the moon, and the stems of varying lengths and diameters were held upright and struck on the pavement or on stones. Smaller stems were hand-held and beaten with hardwood sticks. For tonal counterpoint, partially-filled water bottles were struck with spoons. Known as tambour-bamboo bands, these musicians provided parade and dance rhythms and kept alive the African drumming tradition that had survived the middle passage and over two centuries of repression. The tambour-bamboo bands became notorious for using the sharpened ends of their instruments as weapons against both rival bands and the colonial police. The violence between competing groups of Carnival musicians was not eliminated with the banning of the drums. Frustrated officials placed restrictions on tambour-bamboo bands, but they were never effectively outlawed.

By the 1930s, younger musicians ushered in the era of the steel drum. No one knows who originated the practice of substituting dustbins and discarded metal containers for bamboo stems, but many bands augmented their sound with "found" instruments. Paint cans, biscuit tins, garbage can lids, and brake drums created more strident rhythms than the mellow-toned bamboo, and volume was important in the noisy environment of Carnival. By pounding out the bottoms of their cans, varying tones could be coaxed from a single instrument.

During World War II Carnival festivities were suspended, but wartime development of drums included machine-shop worker and musician, Ellie Mannette's innovation to "sink" a drum by beating the top down inside the body of the can (Gibson, 1986, 36). This new technique widened the tonal possibilities of the instrument and, by the return of Carnival in 1946, most steel drummers were sinking their pans. Ellie Mannette is also credited with the most significant innovation in the development of the pan, using the 55 gallon oil drums that were discarded by the hundreds in the early 1940's by the United States military, especially from a large United States Navy facility at Chaguaramas Bay (Oxaal 1968, 80-82). In 1946, Mannette performed Brahms's "Lullaby" on a modified 55 gallon oil drum (Gibson 1986, 36) and dustbins and paint cans soon went the way of the bamboo. In the mid-1960's discordant overtones were eliminated through refinements in tuning and large groups could perform any melody, no matter how delicate, without the distracting ringing noise that marred the early bands.

With the standard resource of the oil barrel came a standard technique for crafting the instrument. Cutting and shaping an oil drum is an exacting skill. The raw barrel is cut to the shape with a sledge hammer. Next, tonal areas are marked and seamed with a hammer and cold chisel. After heating over an open fire and tempering with oil and cold water, the drum is ready for tuning, the work of a handful of masters. The common tuning patterns for steel drums range from the ping pong, or tenor pan, which produces up to 25 or more different pitches, to the bass pan, which produces five. The ping pongs play the melody while the bass and the various rhythms pans (called second, guitar, and cello pans) provide accompaniment. A basic rhythm pan used as a percussive device is generally not tuned.

The repertoire of the contemporary steel band is determined only by the taste of the musicians. In Trinidad, steel bands play traditional Caribbean melodies, popular songs from the United States, and European classics. Commonly, a group will perform a calypso or a Latin American number and follow it with a selection from Beethoven or Chopin.

Diffusion

The rapid diffusion of the steel drum came about despite the social stigma attached to the instrument and its player. A creation of Trinidad's underprivileged, the music was and to some extent still is the single avenue for employment and the sole source of pride and self-identity for many Trinidadians. With the guidance of community and political leaders, pan gradually overcame the notoriety of its origins.

In 1950, a government-sponsored committee organized the Trinidad All-Star Percussion Orchestra (TASPO) to perform at London's Festival of Britain. TASPO's success was immediate, critically acclaimed as "equal to anything that a first-class band could offer" (Hill 1972, 51). The group spent a year performing in England and Paris, but despite their musical successes the old combative rivalries of the tambour-bamboo lived on. TASPO was comprised of nine musicians from different groups with different neighborhood allegiances. The fighting among TASPO members continued throughout the European tour. One musician was hospitalized in Paris after a TASPO fight (Gibson 1986, 36).

The movement of pan from Port-of-Spain to London and its subsequent establishment in the West Indian population of London is an example of hierarchical diffusion. In the Caribbean, where contact among the islands of the Antilles is regular, contagious diffusion is suggested. Despite island provincialism, the steel drum quickly spread beyond Trinidad to be embraced by musicians on Barbados and Antigua and in Suriname. Another major agent of diffusion in the 1950s and 1960s was the United States Navy. In 1956, a steel band was organized among navy musicians (*Music Journal*, 42-43). This group, the Pandemoniacs, went on to give more than 4,000 performances around the world and did as much to spread the music of the steel drum as any native Trinidadian group.

With growing social acceptance, local Trinidadian bands enjoyed sponsorship of oil companies, banks, and airlines, all eager to use the exotic image of the steel drum. Steel bands toured to the United States and Europe, and in 1956-1957, the Mobile Oil Company sent pan elder Winston "Spree" Simon to Nigeria and Ghana to teach the making and playing of the instrument. The drumming traditions of West Africa that had undergone metamorphosis in the New World were brought back to their place of origin.

Migration during the post-World War II period also helped diffuse the pan. Chronic unemployment forced thousands of Trinidadians to the United Kingdom, and in the 1960s and 1970s, to the United States. These immigrants brought with them a taste for steel drums and became an audience for the recording industry's interest in steel drum music.

Place

A feature of Port-of-Spain's urban landscape is the panyard, the place where pan makers, tuners, and musicians meet and rehearse. The panyard's antecedents are the notorious barracks yards of Port-of-Spain's underprivileged. Most of the city's working class in the late nineteenth and early twentieth centuries lived in areas situated behind the frontage of the city streets. The barrack range, as it was known then, consisted of sheds constructed against back walls. These makeshift dwellings faced a strip of open ground that separated similar lean-tos arrayed against the back wall of buildings in the next block. This overcrowded city-within-a-city was the source of urban pathologies and infectious diseases. Malaria, yellow fever, and typhoid swept through these hidden slums, and little was done to alleviate the problems of sanitation and crowding (Brereton 1979, 116-121).

The tambour-bamboo bands used the ground between the sheds as practice areas, and with the emergence of the steel bands these areas became known as steel-yards or panyards. Many of Trinidad's aspiring younger musicians continue to congregate in the yards of Port-of-Spain's poorer neighborhoods. Lately the term panyard has been expanded to include any staging area or location where steel drums are made or tuned but the older sense of the word is still current. For most non-Trinidadians, the traditional panyards are inaccessible, hidden behind city streets.

The public place of steel bands is the cultural landscape of Carnival. Since the creation of the government-sponsored Carnival Development Committee in 1957, pan has been officially recognized as an integral element in the festivities. Several weeks before Carnival, groups compete for a slot at the semifinals of Panorama, the most prestigious competition for pannists. Seven finalists are selected to appear at the grand finale held on Dimanche Gras, the Sunday night before Mardi Gras.

Apart from the competitions that culminate with Panorama, steel bands provide the pulse for thousands of street dancers. Beginning at sunrise on *jour ouvert* -- "opening day," the Monday before Ash Wednesday -- celebrants crowd Port-of-Spain's streets, reshaping the urban landscape with displays of Carnival symbols, icons, and colors, and carousing without pause until "las lap," the final hour before midnight on Tuesday. The large bass and rhythm pans are rolled through the city on custom-built trolleys while the lighter ping pongs are sometimes carried in slings. Centered on Independence Square, the opening round of festivities is accompanied by pan renditions of calypso numbers or by what pannists called Bomb Tunes, classical pieces arranged in calypso tempo. After a brief intermission at midday, the biggest steel bands, some with two hundred instruments, roll out for the "road mas,'" the afternoon parades (Carr 1975, 69).

Apart from Carnival, the international Pan/Jazz Music Festival promotes the art of pan and links the image of the instrument to Trinidad by presenting the music in an international context. Musicians from North and Latin America perform and serve as judges for the final competition held in conjunction with the National Steelband Music Festival.

The image of the steel drum is a symbolic focus for a country whose long colonial past is still alive. The struggle of early pannists to overcome the social stigma of the instrument corresponded with the attempt by Trinidad's intellectual and political leaders to overcome the cultural domination of the British, linking the instrument with the rise of Trinidadian nationalism.

The Steel Drum and Cultural Convergence

The potential of the steel drum is still being explored by musicians, both those trained in musical notation and those who, like the innovators, are gifted but unschooled and impoverished. The instrument is now produced commercially in the United States and Europe, and the demand for written steel drum music increases with the number of college and high school steel drum programs in the United States. The competition in Port-of-Spain draws thousands of spectators, and some steel drum arrangers spend all year preparing for them, and command high salaries. International acceptance and sponsorship may have come at a high psychological price, however.

The wellspring of steel drum creativity was the underprivileged class living on the bottom rung of Trinidadian society. With the drive to maintain their musical traditions in the face of cultural suppression, the originators invested much of their personal identities in group identification and loyalty. The acceptance and international success of pan has been accompanied by a loss of pride and identification on the part of the people who created and nurtured the instrument (Aho 1987, 52). The reaction to pan's popularity in the United States is described by a United States musician in this way: "...the Trinidadians created this art form and all 1,000 of their players feel that they have really built something up, and now all of a sudden, it's here in the States too. Some could possibly even feel like they are losing control of it" (Snider 1986, 43). The "found" instruments of the early steel drummers reflect the creativity and adaptability of a people living on the fringe of society. Now that the pan's evolution has taken it far from the island insularity of Trinidad, the instrument has joined the world community of music and its future depends as much on musical developments in Montreal or London as it does on the panyards of Port-of-Spain.

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Discography

Cordettes Sun Islanders, *Your Favorites in Steel* (Fiesta FCD-1007)

Federators Steel Band and Colon Sisters, *Bomba!* (Monitor MFS-355)

Heart of Steel (Steelbands of Trinidad and Tobago), (CBS MK-42323)

Brutus Marcato, Mardi Gras Orchestra (Fiesta FCD-1013)

Steel Band: Antigua and Trinidad, *Calypso Non Stop* (Playasound PS-65006)

Steel Bands of Trinidad and Tobago (Delos DE-4011)

Sun Islanders, *Barbadoes Steel Drums* (Fiesta 1839)

Trinidad Carnival: Steel Bands of Trinidad and Tobago (Delos DE-4012)

Trinidad Steel Band, *The Original Trinidad Steel Band* (Elektra EKS-7139)

The Trinidad/Tobago Steel Band, *Steel Band Music* (Facet FCD-8201)

Tyrone and Clouds, *Steelband and Island Songs* (Fiesta 1876)

Van Dyke Parks, *Discover America* (Warner Bros. BS-2589)

The Recipe for Steel Bands: A Learning Activity to Accompany *Steel Drums of Trinidad*

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Introduction:

This learning activity explains how geography and history have affected the music of Trinidad, particularly calypso music and steel bands.

Grade Level: Grades 7-10

Time Required: Three to four class periods

Theme and Related Concepts:

Location:

Trinidad's relatively isolated location significantly affected its music (accessibility, dispersion, distance decay, distribution, exploration, site/situation).

Place:

The climate, physical features, soil, and natural resources, as well as the people who came to Trinidad, influenced the development of its music. (acculturation, agglomeration, agriculture, assimilation, climate, convergence/divergence, culture, environmental determinism, environmental perception, ethnicity, geopolitics, innovation, sequent occupance, settlement, sphere of influence, territoriality)

Relationships Within Places:

Calypso and steel band music developed under the influence of historical geography both worldwide and within the West Indies (agriculture, climate, environmental determinism, environmental perception, land use, population, resource).

Movement:

Music in Trinidad is a unique mixture of many kinds of music from all over the world brought together over a long period of time (acculturation, assimilation, communication, diffusion, dispersion, immigration, innovation, migration, sequent occupance, time-space, trade, transportation).

Regions:

Although Trinidad's music is Latin American, it has roots in several other regions of the world (agriculture, convergence/divergence, culture, imperialism, nation, population).

Objectives: As an outcome of this activity, students will:

Knowledge:

a) understand how the location, land, climate, and history of Trinidad and Tobago have greatly affected its music

b) recognize all five themes of geography in this explanation of how steel bands were created.

Skills: develop listening and note-taking skills.

Attitudes/Values: appreciate calypso and steel band music.

Materials Needed:

"Recipe for Steel Bands" (Handout 1) for each student, recipe ingredients sheets for teacher, a big pot, a big wooden spoon, a cassette tape recorder, a cassette tape of calypso and another of steel band music (two suggestions from which to tape music are the records called *The Music of Trinidad* by the National Geographic Society (1971) and *Trinidad Steel Band* by Audio Fidelity, Inc., 770 11th Avenue, New York, New York), optional chef's hat, and optional history of steel bands summary sheet.

Background:

Before this activity, make a duplicate copy of the "ingredients" sheets for steel bands. Cut the duplicate so that each ingredient is on a separate piece of paper. On the reverse of each, write the name of the ingredient in large letters so students can read it as you hold it up.

You will also need two cassette tape recordings, one of calypso music, the second of steel band music. They should each be at least two or three minutes long each. Your public library can probably help you get recordings of this kind of music.

Put on your chef's hat (optional; call yourself the Creole Cook), and bring out a big pot in which you have already placed the two cassette tapes and announce that you will demonstrate the recipe for steel band music.

Distribute copies of Handout 1 to students.

One at a time, hold up the ingredient slips of paper, in order. As you read aloud about each one, students will write it down on their advance organizer note-taking sheet. After you read about an ingredient, throw it in the pot. Occasionally stir the ingredients with the big wooden spoon.

When you get to ingredient Number 12, Calypso Music, tell students that you have already finished cooking one musical delicacy. Reach in the pot to take out the tape of calypso music. Play it for them as you read about it.

Continue until you finish reading ingredient Number 22 and take out the steel band tape. Now play it for them.

Stop the tape, and read the assignment at the end of the advanced organizer sheet. Have the students work on this assignment as you continue to play the tape of steel band music.

Discuss the assignment when they finish, having students state and defend their examples of the five themes.

Evaluation: A quiz could be given to check students' comprehension of facts and relationships.

Enrichment Activities:

Learn about other kinds of Latin American music and dances such as reggae, bossa nova, rhumba, samba, mambo, conga, cha cha, and soca. Find out where they came from, when and how they evolved. Try to differentiate between them when played.

HANDOUT 1

Name: ________________________________ Period: ____________________

RECIPE FOR STEEL BANDS

Fill in the ingredients for this recipe as you hear them.

1. ________________ This attracted plantation agriculture and a variety of people to work here. These people eventually created steel bands.
2. ________________ They delayed European settlement on Trinidad by their fierce attacks upon the Spaniards. This delay later led to a variety of cultures coming to Trinidad who all contributed in some way to the creation of steel bands.
3. ________________ They brought the Roman Catholic religion. They also brought an attitude of cultural and racial tolerance. Both had a significant effect upon music in Trinidad.
4. ________________ This was used to seal ship's hulls. It attracted many ships, including the ships of pirates who attacked Spanish settlements and delayed the economic development of Trinidad. This long delay affected the kinds of people who came. They, in turn, affected the kind of music that was created here.
5. ________________ Cacao plantations brought Africans to work as slaves. They became the majority of the population. They also brought their drum music which had a big influence on steel bands.
6. ________________ The death of the Arawaks meant even more importation of slaves from Africa.
7. ________________ Slavery and Trinidad's remote location meant neglect, poverty, and misery for the people. But it also caused greater freedom for slaves than in other places.
8. ________________ Their language and customs contributed greatly to the music of Trinidad.
9. ________________ These brought more people to Trinidad to work and share their customs.
10. ________________ They imported more cultural groups and enforced strict rules that limited and changed musical expression.
11. ________________ Their religions, music, and customs blended in with Trinidad's cultural mix.
12. ________________ This is Trinidadian folk music which was influenced by many cultures, but especially African ones. It is the primary music of steel bands.
13. ________________ This makes the poor people more determined to play their music and more creative in inventing ways to do it.
14. ________________ This kept music alive in Trinidad during repressive times caused by the British.
15. ________________ This added the second major island to this future country.
16. ________________ This improved the economy and led to circumstances that caused steel bands to be created.
17. ________________ This further reduced Trinidad's musical instruments and set the stage for the creation of a new instrument, the steel drum.
18. ________________ This was the beginning of the steel band sound.
19. ________________ This gave the people an excuse to play music and an opportunity to demonstrate

their skill as musicians.

20. ________________ This brought the instrument of the steel band to Trinidad and caused the circumstances under which it was invented.

21. ________________ Then the steel drum was refined and improved upon as an instrument.

22. ________________ The isolated location of Trinidad has kept its music mostly pure and unique.

Now look at the 22 ingredients for the creation of steel bands and do the following:

1. Pick two ingredients that are examples of the first geographic theme of Locations and put "L" next to their numbers. *Location* describes where a place is.
2. Now put a "P" next to two ingredients that are examples of the geographic theme of *Place*, describing somewhere.
3. Put an "H" next to two ingredients that are examples of the geographic theme *Human-Environment Interaction*, how people affect their surroundings and how surroundings affect them.
4. Put an "M" by two numbers that are examples of *Movement*. This geographic theme refers to the effects of transportation and communication.
5. Finally, put an "R" by two ingredients that are examples of *Regions*, sets of places that have something in common.

RECIPE AND INGREDIENTS SHEET

1. **Land and Climate**

   Start with four cups of fertile Trinidad soil and three cups of rain from Trinidad's tropical climate. Trinidad is one of the few islands in the West Indies with a large amount of flat, fertile land. The land and climate are ideal for growing sugar cane on the plains, cacao in the mountains, citrus fruits (particularly limes), coconuts along the coast, rice in the swampy areas, cattle in the forested areas, and indigo and coconuts on Tobago. The land and climate attracted many other ingredients in this recipe for steel bands.

2. **The Arawak Indians**

   Add one half cup of Arawak Indians, the native people of Trinidad and Tobago. They were fierce fighters and rivals of the Carib Indians, but no match for Europeans, once significant numbers of them arrived. Their early attacks on the Spaniards delayed settlement for about 100 years after Columbus discovered Trinidad.

3. **Spaniards**

   Add one cup of Spaniards. They brought the Roman Catholic religion, which had a very significant effect upon steel band music in years to come. They also brought a racial and cultural tolerance which had a very significant effect upon steel band music. This is true throughout Middle America and the West Indies as well as much of South America.

4. **Pitch**

   Add one half cup of pitch, or tar, used for centuries to seal the hulls of wooden sailing ships. It comes from Pitch Lake, the largest natural asphalt pit in the world. Pitch attracted ships of all kinds to Trinidad. Many were pirate ships whose crews attacked and plundered Spanish settlements. These attacks contributed to preventing Trinidad from ever becoming a very important Spanish colony. And that led to many other kinds of people eventually coming to Trinidad to inhabit and work upon this remote island.

5. **Cacao, Africans, and Drums**

   Put in one half cup of cacao, from which chocolate is made. Cacao is a native plant of Latin America and was Trinidad's first cash crop. It was also its most valuable crop until the 1920s when the Gold Coast (Ghana today) in Africa started growing large amounts of it. But, more importantly, add three cups of Africans and blend in thoroughly with the Spanish and Arawak Indians. At first, Africans were brought to work on the cacao plantations and then on the sugar plantations. The Africans also brought their drum music, a basic ingredient of calypso music and steel bands.

6. **Eliminate Arawaks**

   Simmer and occasionally stir these ingredients for about 100 years until the Arawak Indians almost evaporate from the hard labor forced upon them by the Spanish. They had been in decline for many years prior to the arrival of the Africans, but plantation work really took a drastic toll upon them.

7. **Neglect and Poverty**

   As you stir, add several tablespoons of benign neglect and deprivation of education, health care, and adequate shelter. This neglect and deprivation had both positive and negative effects on the slaves. The negative effects were poverty and suffering, both physically and culturally. The positive effect was that the poor supervision and loose control of the Spaniards allowed a greater degree of freedom for the Africans than in other places in Latin America. By the 1820s, for example, more than 14,000 slaves had bought their freedom from the Spaniards. This easygoing yet deprived lifestyle and their semi-freedom are reflected in their music.

8. **The French**

Now add one cup of the French to add spice to our Trinidad steel band concoction. The French language and customs gave Trinidad and its music a distinctive Creole flavor unlike any other place. Creoles are people of European descent born in the West Indies or Spanish America. The idea of dressing up in masquerade or "mas" during the Roman Catholic pre-Lenten celebration called Carnival was begun by the French as a way for slaves to poke fun at the elaborate clothes and habits of their masters. The procession, or parade, during Carnival was encouraged by the French, too. The procession provided blacks with an excuse to make joyous music. The mixture you have so far has a unique flavor, an appealing odor, and the smooth consistency of pudding.

9. **Sugar and Rum**

Pour in a cup of sugar and a cup of rum made from Trinidad's sugar cane. Sugar cane was a major source of income for Trinidad during the 1700s and 1800s, eventually overtaking cacao production in the 1900s. Increased sugar production was one of the factors that led to more ethnic groups coming to Trinidad from the mid 1800s to the early 1900s.

10. **The British**

Add a cup of the British to give the steel band mixture a thicker body and bring out its soul. The British were organized and strict. They improved the quality of life somewhat but put limits on freedom of expression by the Africans. They also added more ingredients to the recipe when they expanded plantation agriculture and abolished slavery. They had to import more foreigners to grow cacao and sugar.

11. **Indian and Chinese Indentured Servants**

Add two cups of indentured servants from India and one fourth of a cup from China to grow sugar cane. The Indians brought their own drum music, which had a different cadence and style than African drum music. It had a unique effect as it blended into Trinidadian drum music. The Indians also brought Hinduism and Islam with them. The Chinese, although relatively small in number, added an oriental spice to the recipe that makes Trinidad and its music very open and universal in its style and appeal, yet unique to Trinidad.

12. **Calypso Music**

Slavery, a big variety of ethnic groups on Trinidad, poverty and neglect all helped give our gastronomic creation a strong aroma and gritty texture. At the same time that slaves were enduring hardships, they were also experiencing an unique brand of freedom and ethnic openness. This was because of the generally loose control by the Spaniards and French and by the cultural smorgasbord of people brought in by the British to work the plantations. Customs and ideas were shared and blended continuously. From this unique situation evolved a new form of music, calypso, or Trinidad folk music.

Calypso music tells the facts and strong emotions of history though a relaxed, simple rhythm and clever and even spontaneous lyrics. Calypso is more than music, it is a form of oral history and also a dance. It started when slaves, who were prohibited from talking as they worked, secretly communicated with each other in the fields by singing their messages in a slang or "patois" form of French. Although calypso music is purely Trinidadian in origin, it has deep roots from many other places. For example, we think the word calypso comes from the Ibo language of Nigeria. Their work "kaiso" means "once more," or "it is good," or say it again." Calypso, although created under suppressed and harsh living conditions, is a happy, exciting kind of music that expresses hope and enjoyment.

13. **Ban Drum Music**

Bring the whole mixture to a boil when the British banned drum music in 1883 because they thought the Africans were sending secret drum messages encouraging rebellion. Although the British tried to evaporate drums from this recipe, they succeeded only partially and only temporarily. The law banning drum music was later repealed because both the Africans and Indians protested and even rioted over this law. Drum music was too ingrained in the hearts and souls of the people to be eliminated as a means of expression for them.

14. **Tamboo-Bamboo Bands**

Replace the partially evaporated drum music with a cup of a new kind of music, the music of the tambour-bamboo band. When Africans and Indians were denied the right to play drums, they used different lengths of dried, hollow bamboo sticks to pound on the ground or against each other to create a melodic percussion sound. Although the instruments were rather primitive, they served their purpose to keep the drumming tradition alive through repressive times.

15. **Tobago**

Add a quarter cup of Tobago sauce to our Trinidadian mixture. Tobago, the island Robinson Crusoe supposedly was stranded upon, was handed from one European country to another as a spoil of war for many years. It had been controlled by the Spanish, Dutch, French, British, and even a place called Courland that was part of the country of Latvia, until recently a republic in the Soviet Union. Its appeal to European countries was its fertile soil upon which cotton, sugar cane, coconuts and indigo could be grown. Indigo is a plant that yields a dark blue or grayish, purplish blue dye. Tobago also had a good strategic location for military purposes near the South American mainland. By the late 1800s it was very poor and underdeveloped. In 1899 it was made part of the colony of Trinidad by their last captors, the British. Eventually, in 1962, the two islands became one nation.

16. **Petroleum**

Pour in a cup of oil; not vegetable oil, but crude oil. It is Trinidad's main export. The petroleum industry started here about 1910 and provided two important additions to our steel band recipe. First, the increased income elevated Trinidad and Tobago out of poverty. And second, the abundance of petroleum was part of the reason that the United States built a military base here during World War II. Without that military base, steel bands might not have been invented.

17. **Eliminate Tamboo-Bamboo Bands**

Again, bring the mixture to a boil to eliminate the tamboo-bambour bands. In the 1920s the British banned these bands because they were so noisy and were played at all hours of the day and night in the slums of Port-of-Spain. Now the people were reduced to beating on garbage can lids, dustpans, biscuit tins, and anything else they could find to express their musical drive.

18. **The Pan**

It is time to add the secret ingredient to our recipe that creates the steel band instrument known as the pan, or steel drum. The secret ingredient is a tablespoon of an accident. In the mid 1930s a famous kettle drum player named Winston "Spree" Simon loaned his kettle drum to another musician. But the other musician accidentally put a dent in it. When Simon tried to pound the dent out, he noticed that the sound made near the dent was different than on other parts of the drum. He experimented by making other dents, some big, some little, on other parts of the drum head to create not only a percussion instrument but also a melody instrument. Thus the steel drum, or pan, was born.

19. Carnival

Liberally sprinkle in some colorful Carnival decorations and customs. Carnival is a two day Roman Catholic celebration on the Monday and Tuesday before Ash Wednesday, the beginning of the 40 day Christian holy season of Lent. Lent is a solemn time when Christians remember Christ's final days before his crucifixion and then resurrection on Easter Sunday. Carnival is a joyous last fling before this serious holy season begins. The people dress up in two sets of costumes, one set on Monday and another on Tuesday. On Monday the people dress up in masks and costumes from previous years. Monday is called "Old Mas" (Masquerade) or "Dirty Mas." On Tuesday the costumes and masks are newer, very colorful, elaborate, and expensive. In Trinidad on the Saturday before "Old Mas" each year there is now a steel band competition to crown the Calypso Monarch of the year. Steel bands, calypso singers, and soca bands (a combination of soul music and calypso) march in the processions, or parades, on Monday and Tuesday. The Carnival celebration kept slaves' and indentured servants' music alive for hundreds of years, even when drum music was banned by the British. Since Carnival was a religious celebration, it was considered too holy to abolish. It was an excuse for the people to play their music in a pent up burst of joy and anxiety each year.

20. The United States and the Oil Drum

When the United States entered World War II, it built a military base here to protect this part of the Caribbean, to utilize and protect Trinidad's oil, and to train troops in a tropical climate. Soldiers added American customs and beliefs to Trinidad's ethnic smorgasbord. But the main new ingredient was the 55 gallon oil drum. These oil drums were very plentiful on the military base. When VE (Victory in Europe) and VJ (Victory over Japan) days occurred at the end of the war, there were spontaneous celebrations by Trinidadians. The people were in an especially joyous mood because Carnival had been banned all during World War II for security reasons. People grabbed anything they could find with which to make music. One of the things they grabbed were the used oil drums. They quickly discovered that by pounding dents in the tops of the drums and by cutting the drums off in various lengths they could play several notes in various pitches and create an entire band of inexpensive steel drums, or pans. With the other instruments being used such as maracas, tambour-bamboo sticks, the gong, the box bass, African skin drums such as the boolay or medium cutter, four and six string guitars, instruments from India such as cymbals and their own drums, and even occasional saxophones and banjos from the United States, a unique new musical sound had been created.

21. Genius

Add a pinch of technical genius provided by another innovative steel drum musician named Ellie Manette. He was able to create an exact range of notes in a specific order on the steel drum. No longer was every pan uniquely different. Now there was at least some uniformity to this new instrument, the only new musical instrument of the twentieth century with the exception of the electronic synthesizer.

Manette created the range of notes by heating the drum head and pounding it down into a concave bowl shape, called "sinking," putting grooves in the drum head with a hammer and steel punch to separate notes, called "grooving," tempering the head with water or oil, called "burning," sawing off the drum to the right length, "cutting," and then pounding the drum head with a small hammer to get the exact pitch, "tuning." Pounding down on the drum head produces a lower pitch. Pounding up from the reverse side causes higher pitch. Manette also invented the rubber tipped drumstick that brought out the resonance of the steel drum sound.

22. Location

Finally, cook the steel band on medium heat on the back burner for 20 years. The golden age of steel band music lasted from the end of World War II until the mid 1960s. The back burner represents Trinidad's isolated location in the world. Do not let any other cooks from other countries taste or smell the sounds of steel band music. Too many cooks would have definitely spoiled this pot. Part of this unique music's appeal is its exclusive Trinidad heritage. Although the ingredients come from all over the world, it took this place with its isolated location, fertile soil, and tropical climate to create the circumstances that brought the ingredients together in just this way. The result was a new taste for our musical palette. Not until recent years, when Trinidad's oil has started to run out, have they promoted Carnival, calypso music, and steel drum bands. Steel band music has remained mostly uninfluenced and uncommercialized by outside influences.

Today steel bands may have over 100 members in them. They may be entirely steel drum bands or have a few other instruments added. There are about 110 steel bands in Trinidad today. Steel band members rarely read sheet music. Even though their repertoire is mostly calypso and limbo music, they now play all kinds of other music, even classical. The steel band sound expresses the deep, shared feelings of the underprivileged people of Trinidad. It is influenced by indifference, hostility, and the input of many cultures. Yet it has emerged as an exciting, joyous sound of hope and happiness that the world has noticed and for which the world shouts "Kaiso!," "Encore!"

Geography of Religious Belief Systems

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Religious belief systems are universal among the world's population (Figure 1). People's curiosity about their place in the cosmos, the meaning of being, and the possibility of life after death have led to searches for explanations for little understood processes of nature, frightening calamitous events, and other puzzling unknowns. A variety of belief systems have emerged in response to such mysteries, providing "answers" and security to their adherents.

Diversity characterizes religious belief systems. Some, such as Christianity, Judaism, and Islam are monotheistic, focusing on one God. Others, including Hinduism and Buddhism, are polytheistic, believing in the power of numerous supreme beings. Various tribal peoples practice "animism" whereby elements of nature are believed to contain spirits and are considered sacred. Some new religions have arisen out of contact between two or more different religions. Sikhism, for example, evolved in the contact zone between Islam and Hinduism in India's northern Punjab region.

There is as much diversity within belief systems as there is among them. All of the world's major religions have different paths of thought and action within them. For instance, 90 percent of Muslims are Sunnites living in such places as Saudi Arabia, while Shi'ites, with four subgroups, account for the remaining ten percent and are found in such places as Iran. Buddhism has multiple schools of thought and there are literally countless ways of practicing Hinduism. Christianity is also diverse. Roman Catholic, Eastern Orthodox, and Protestant are only broad categories, each housing an array of subdivisions (Figure 2).

Evolving Regional Patterns

Although the world's major religions have their origins relatively close together in Asia, they have diffused or spread far and wide around the world. Universalizing belief systems, including Christianity, Islam, and Buddhism, are believed by their adherents to be appropriate for all of humanity. Gathering converts and establishing missions have been important means of diffusion of these faiths. In addition, military conquest has played a role in the spread of both Islam and Christianity. In contrast, ethnic belief systems such as Judaism and Hinduism are typically associated with a particular ethnic group and are often restricted to a specific region. These religions diffuse to new regions only when their adherents relocate.

In the Americas, prior to the Age of Discovery, indigenous populations practiced animism and experienced direct psycho-emotional contact with the trees, mountains, animals and other natural elements of the environment. Many Native Americans lived in close harmony with nature, caring for it and protecting it from exploitation. Many locations acquired particular spiritual importance and were considered sacred.

The coming of the Europeans spelled disaster for these belief systems because Europeans believed that it was their sacred duty to convert the native populations to European religions. Missionizing was a key function of colonialism by both the Spanish and Portuguese in South America and the Spanish and French in North America. Later, English Protestants also sought converts among the Indians. Conversion was obtained through teaching and, all too frequently, by force. While animistic practices are no longer widespread, many natural

FIGURE 1

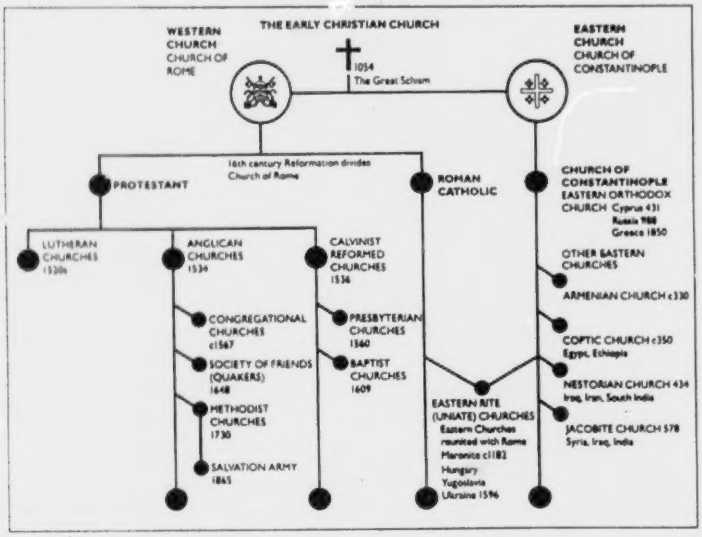
Adherents of Major Religious Belief Systems (Estimates in Millions)

Belief System	North America	Latin America*	World	Percentage of World
Universalizing				
Christian	231.5	393.1	1540.3	30.6
Roman Catholic	88.1	367.2	798.5	15.9
Protestant	96.3	16.4	370.8	7.4
Eastern Orthodox	5.9	0.4	158.2	3.1
Other (e.g. Anglicans)	41.2	9.1	212.8	4.2
Islam	2.7	0.6	840.2	16.7
Buddhist	0.4	0.5	307.6	6.1
Ethnic				
Hindu	0.8	0.6	593.8	11.8
Chinese faiths	0.2	--	368.4	7.3
Shinto	0.5	--	36.6	0.7
Judaism	8.1	1.0	18.0	0.4
Tribal	0.2	1.7	122.2	2.4
Secular	23.3	19.5	1073.8	21.4
Other	2.3	4.0	125.1	2.5
TOTAL	**270.0**	**421.0**	**5026.0**	**99.9**

* Includes Central America and the Caribbean. Source: *Encyclopedia Britannica*, 1987.

FIGURE 2

Chart of main Christian denominations


THE EARLY CHRISTIAN CHURCH
WESTERN CHURCH CHURCH OF ROME
1054 The Great Schism
EASTERN CHURCH CHURCH OF CONSTANTINOPLE
16th century Reformation divides Church of Rome
PROTESTANT
ROMAN CATHOLIC
CHURCH OF CONSTANTINOPLE EASTERN ORTHODOX CHURCH Cyprus 431 Russia 988 Greece 1850
LUTHERAN CHURCHES 1520s
ANGLICAN CHURCHES 1534
CALVINIST REFORMED CHURCHES 1536
OTHER EASTERN CHURCHES
ARMENIAN CHURCH c330
CONGREGATIONAL CHURCHES c1567
PRESBYTERIAN CHURCHES 1560
COPTIC CHURCH c350 Egypt, Ethiopia
SOCIETY OF FRIENDS (QUAKERS) 1648
BAPTIST CHURCHES 1609
NESTORIAN CHURCH 434 Iraq, Iran, South India
METHODIST CHURCHES 1730
EASTERN RITE (UNIATE) CHURCHES Eastern Churches reunited with Rome Maronite c1182 Hungary Yugoslavia Ukraine 1596
JACOBITE CHURCH 578 Syria, Iraq, India
SALVATION ARMY 1865

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sites still remain sacred to Native Americans (Figure 3).

The greatest changes in the religious map of the Americas have been brought about through immigration. Early immigrants included religious refugees fleeing persecution in their homeland. William Penn's Quakers from England, the Huguenots (French Protestants), and the Amish and Mennonites from Switzerland and Germany are examples. Jews, persecuted for their religious beliefs throughout history, came to America's cities for religious freedom. The Mormons, originating in Palmyra, New York, were also driven by persecution westward where they founded several settlements and the state of Utah.

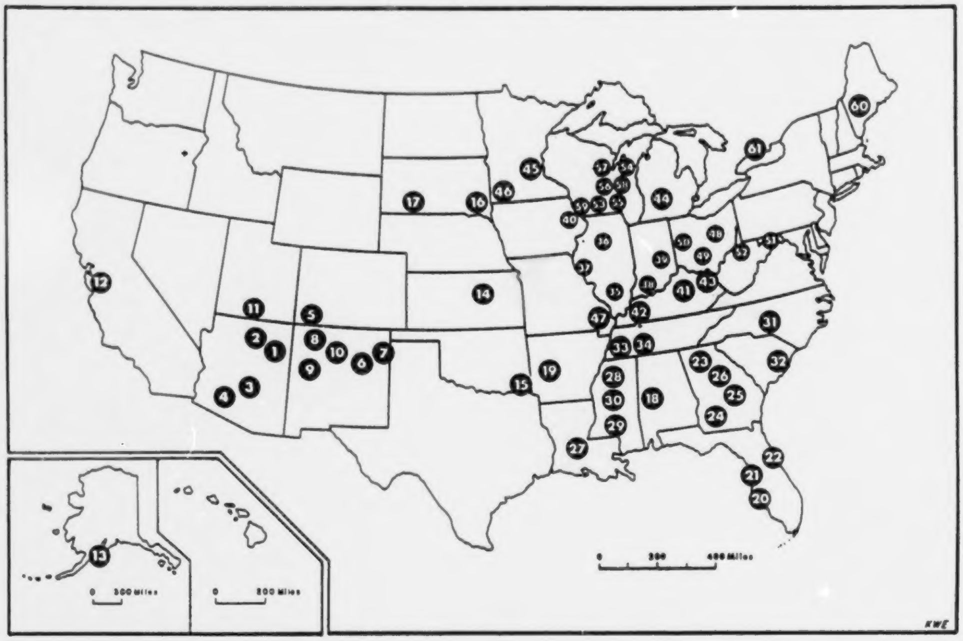
Others sought land, economic opportunity, and the chance for a better life in the New World. Lutherans came from Scandinavia and Germany and clustered in the north central region around the Great Lakes in environments similar to those they had left in Europe. Mennonites and Ukrainian Catholics traveled to the prairies of Canada. Anglicans and Presbyterians from the British Isles settled in Ontario and British Columbia.

Roman Catholics from Spain, Portugal, and elsewhere migrated to South America. The existing Catholic population of the North American Southwest grew with an influx of Mexicans. In addition, Brazil and the Caribbean islands were unique in that they were the recipients of large numbers of African slaves. Although slaves were "converted" to Christianity, many retained their traditional African beliefs and practices and frequently combined these with Christian ones. The Afro-Brazilian belief systems of Candomble and Umbanda, for example, have as many as 30 million adherents.

Significant numbers of Indians came to the British island colonies in the Caribbean. Today, 40 percent of Trinidad's population is East Indian and the island boasts nearly 200 Hindu temples and nearly 100 Muslim mosques. Suriname, Guyana, and Jamaica also have large numbers of East Indians.

FIGURE 3

Selected Native American Sacred Sites



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Selected Native American Sacred Sites
ANSWER KEY

SOUTHWEST

1 Oraibi, Hopi Pueblo since c1100CE with kivas (circular ceremonial rooms)
2 Walpi, founded c1700CE; antelope ceremony, snake dances during odd years
3 Snaketown, Hohokam village c1-1200CE with ball court and mounds
4 Gatlin, platform mounds c700-1400CE
5 Mesa Verde Pueblo, 23 kivas c1100-1300CE
6 Bandelier, mainly 16th century kivas
7 Taos Pueblo with kivas
8 Chaco Canyon's Pueblo Bonito, 32 kivas and ball court c950-1300CE
9 Zuni Pueblo, Shalako festival late Nov/early Dec
10 Pueblo Grande, ball court c950-1300CE
11 Anasazi Indian Village, kivas flc900-1100CE (Utah)
12 Coyote Hills Park, 4 shell mounds c1500BCE-1400CE (California)

NORTHWEST

13 Katmai, ceremonial house c1000CE

GREAT PLAINS

14 Indian Burial Pit, 140+ graves pre-1000CE (Kansas)
15 Spiro Mound c1400CE carved stone and wood (Oklahoma)
16 Sherman Park Burial Grounds, several c350CE (South Dakota)
17 Black Hills, sacred to Sioux (South Dakota)

SOUTHEAST

18 Mound Monument, 40 mounds c1200-1400CE
19 Caddo Burial Grounds (Arkansas)
20 Madira Bickel Mound c1-1600CE
21 Safety Harbor Site, late prehistoric Timucua temple mound
22 Turtle Mound, prehistoric oyster shells
23 Etowah Mounds c1350CE
24 Kolomoki Mounds c700CE
25 Ocmulgee, earthlodge c900-1100CE
26 Rock Eagle Effigy Mound
27 Marksville Indian Park Mounds c400BCE-
28 Bynum Mounds c700CE (Miss)
29 Emerald Mound 1300-1600CE (Miss)
30 Owl Creek Indian Mounds (Miss)

CAROLINAS

31 Town Creek Indian Mound with square of religious buildings c1500-1600CE (N)
32 Seewee Mound (S)
33 Chuclissa Indian Town c900-1600CE (Tenn)
34 Shiloh Mounds c1200-1300CE (Tenn)

NORTHEAST

35 Cahokia Mounds, 85 temple and burial mounds c800-1550CE (est pop 75,000)
36 Dickson Mounds c2000BCE-1300CE
37 Pere Marquette, mounds c1CE-
38 Angel Mounds on R Ohio c1400-1600CE
39 Mounds State Park, 9 mounds
40 Effigy Mounds, 200 in 1500 years; Fish Farm Mounds, 30 prehistoric Woodland culture; Pikes Peak. All on R Mississippi (Ia)
41 Adena Park circle c1000BCE-200CE (Ky)
42 Ancient Buried City inc temple (Ky)
43 Ashland Central Park, 5 mounds (Ky)
44 Norton Mounds, 17 of 40 survive c400BCE-400CE (Mich)
45 Mounds Park, 6 of 18 survive (Minn)
46 Pipestone Quarry c1650CE (Minn)
47 Towosahgy, temple 900CE (Mo)
48 Campbell Mound; Newark Earthworks c1000CE-; Story Mound; Tarlton Cross Mound, 90ft wide cross (Ohio)
49 Fort Hill, Hopewell circular ceremonial center; Selp Mound, Hopewell circular earthwork; Mound City Group, 24 mounds c300BCE; Serpent Mound (Ohio)
50 Miamisburg Mound (Ohio)
51 Cemetery Mound, prehistoric (W Va)
52 Grave Creek Mound, 69ft high in 1838 (W Va) Wisconsin
55 Aztalan, 74 mounds c1100-1300CE; Devils Lake, Mendota Hospital Mound and Muscoda Mounds; Panther Intaglio effigy
54 High Cliff, 13 prehistoric effigy mounds
55 Lizard Mound
56 Man Mound
57 Menasha Mounds, 3 mounds c900CE
58 Sheboygan Mound Park, 33 mounds 500-1000CE
59 Wyalusing, prehistoric
60 Damariscotta River Mounds (Maine)
61 Serpent Mound c130CE (Ontario)

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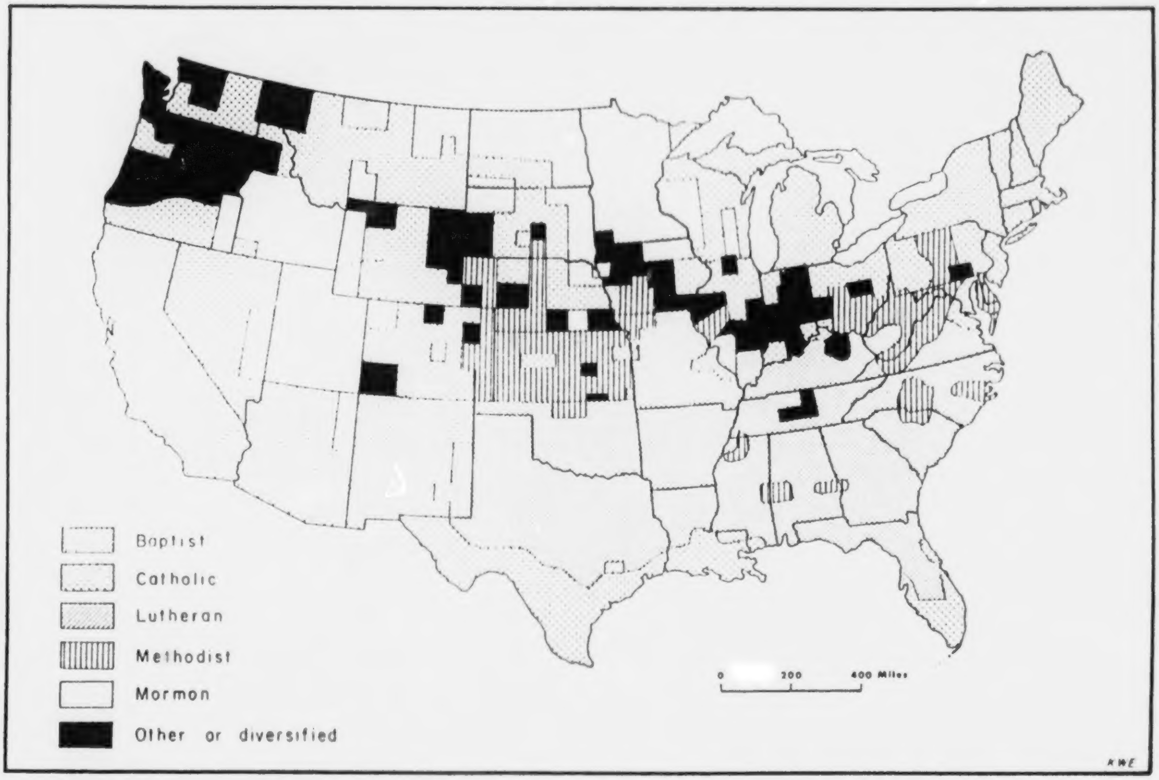
A basic regional pattern of religious belief systems in the Americas was established by the middle of the twentieth century. Latin American populations were considered to be at least "nominally" Roman Catholic with animists remaining only in remote parts of the Amazon Basin. North American populations exhibited greater diversity, with a general pattern of Catholics concentrated in the Northeast and Southwest, Mormons in Utah, Baptists in the South, Lutherans in the North-Central United States, Methodists in the Mid-Central, and sizeable Jewish congregations in major cities (Figure 4). Regions of rapid population change such as California exhibited not only several different religious but also multiple divisions of a particular belief system. Many California cities, for example, now have churches for a dozen or more varieties of Protestantism.

Many changes have taken place on the religious maps of the Americas in the latter half of this century. Latin America has witnessed the rise of liberation theology and the dramatic growth of Protestant faiths, particularly evangelical ones.

Liberation theology developed in the 1960s in response to social, economic, and political pressure in much of Latin America. The movement teaches that government oppression is a sin and that the faith allows the poor to take their destinies into their own hands. As governments have reacted to this movement with increasing violence, many priests support "good violence" and revolutions. Liberation theology is at its strongest in El Salvador, Nicaragua, and Colombia. Evangelism has diffused into every nation as a grassroots movement experiencing explosive growth. Between 20 and 30 percent of all Guatemalans are Protestants, with roughly half belonging to evangelical sects. Thousands of Christian communities have been organized in the *barrios* (squatter settlements) of Latin America. Evangelical Protestant beliefs are particularly appealing to the poor because they focus on community self-help as well as the joy of salvation. Moreover, Protestant missionaries are tolerated by governments because they do not foment violence and revolution. The combined impact of these North American-based missionary

FIGURE 4

Religious Affiliations in the United States



groups with others such as Jehovah's Witnesses, Mormons, and Seventh-Day Adventists make Protestantism a major influence in Latin America.

The religious map of North America is also being altered by a rise in evangelism, but more obvious changes derive from migration, especially from Asia. There are now more than 400 Buddhist centers in North America, and Buddhism is the most successful Asian religion among non-Asians. Buddhist temples are increasingly common in both Canadian and American cities. The $25 million, ten building complex *Hsi Lai* (Coming West) Temple in Hacienda Heights (near Los Angeles), California is the largest in the western hemisphere. Indian immigrants from South Asia, Africa, and the Caribbean have stimulated the construction of Hindu temples from Flushing, New York to Malibu, California. Pittsburgh's Sri Venkateswara Temple, consecrated in 1979, was the first architecturally correct Hindu temple built in North America. Vancouver, British Columbia, is the main center of Sikhism in the Americas. The completion of the Islamic Centers in Cedar Rapids, Iowa in 1952 and Washington, D.C. in 1957 symbolized Muslim identity and unity in the United States. Today, Islamic mosques and supportive organizations can be found in virtually every state and Canadian province. As populations continue to shift, patterns of religious adherence become more complex and religious institutions make adaptive changes to new realities. For instance, many mainstream churches are again offering multiple services in different languages to accommodate recent immigrants, just as they did in the early twentieth century for European immigrants. In southern California, Korean, Vietnamese, and Spanish services at the same church are not uncommon.

Expressions of Belief Systems in the Cultural Landscape

Social and cultural practices as well as visible markers on the landscape can reveal the degree of religious diversity or uniformity in a particular place as well as the geographic extent of a particular religion's influence. Patterns of adherence can be mapped to show the extent and density of a religion's influence, while the mapping of religious institutions can illustrate religious diversity in a place. Patterns of organization can also be investigated to determine regional hierarchies of administration. The spatial distribution of religious place names such as Notre Dame-de-la-Paix (our Lady of Peace), Eden, Santa Maria, Sao Paulo, Belem (Bethlehem), and Teotihuacan (Place of the Gods) also depicts geographies of religious belief systems.

Buildings, landmarks, and other visible symbols on the landscape reveal the presence of a religious belief system and are often marked by distinctive and recognizable traits. Sacred structures such as churches, mosques, and temples exhibit identifying spatial arrangements and orientation. Most religious structures have a vertical dimension, aspiring to the heavens, and many churches face east to the rising sun, the light of life. Islamic mosques are all oriented toward the holy city of Mecca. Sikh *gurdwaras* (temples) all fly the yellow *nishan sahib*, a flag denoting the presence of Sikhs and offering hospitality to all people. Hindu temples frequently have elaborate and intricate domes and gateways. The presence of these structures and the presence of sacred symbols, colors, and objects add to the religious ambience of places. The "Mogen David" (Star of David) and blue and white colors symbolizing Judaism, the crescent and green symbolizing Islam, and yellow and white, symbolizing Buddhists, are present on many landscapes. Statuary and shrines also mark the presence of religion on the landscape.

Certain sacred places are the focus of pilgrimage, or sacred journey. The Shrine of Guadeloupe near Mexico City and Sainte Anne du Beaupre near Quebec City are important Catholic pilgrimage destinations. Salt Lake City draws thousands of Mormons from all over the world each year. Pittsburgh's Sri Venkateswara Temple is the main pilgrimage center for North American Hindus. Both North and South Americans participate in pilgrimages to Mecca in Saudi Arabia, a requirement for Muslims, and in trips to the "Holy Land," a trip of special significance for Jews, Christians, and Muslims.

Commercial sales and production also are markers on the religious landscape. There are Christian book and video stores, and Catholic churches often sell statues, rosaries, and candles among other items. Nashville, Tennessee, dubbed "the buckle on the Bible Belt," is the religious printing and publishing capital of America. "Botanicas," selling products associated with African influenced and folkloric belief systems, are increasingly common in cities with large immigrant populations from the Caribbean region. In New York, Los Angeles, and Miami, for instance, there are several hundred of these "spiritual pharmacies" serving the Latino and Creole communities. Candomble and Umbanda shops abound in Brazil.

Daily cultural practices are directly linked to religious belief systems. Certain religions set rules for food preparation or even food taboos. Jewish Kosher Laws prescribe the methods for slaughtering animals and proscribe certain foods and food combinations. Both the *Koran* and the Muslim *Hadith* (tradition) define *halal* (permitted) foods and specify the rules for killing animals. Fasting from dawn until dusk during the month of Ramadan in the Islamic calendar unites all Muslims around the world and engenders an appreciation of human frailty and the plight of the less fortunate. The end of Ramadan, known as *Eid el Fitr* is a time of great celebration. Both Jews and Muslims avoid pork consumption; most Hindus prefer a vegetarian lifestyle. Other examples include meatless Fridays among some Catholic groups and the ban on the sale of alcohol in numerous North American communities.

Another aspect of religious belief systems of geographic concern is sacred time. All religions have holidays (holy days) commemorating particular events such as the birth of Christ or Buddha. In addition, they denote the days for collective worship: Sunday for Christians, Saturday for Jews, and Friday for Muslims.

The study of variation in death and burial practices is also of concern to geographers. Death is usually followed by a religious ceremony and cemeteries are regarded as sacred places. Orientation and spacing of grave sites and types of vegetation are distinctive of religious belief systems, as are the variations in size, elaboration, and material of tombstones. Consider, too, the differences in land values in cemeteries depending on "the view."

Religions influence people's attitudes toward the natural environment. Tribal societies often see nature as a manifestation of the holy and themselves as subservient to nature. Belief in the sanctity of certain natural sites persists in many regions. Every year, for example, some 4,000 Cheyenne and Lakota pray in silence at Bear Butte, South Dakota. The Taos Pueblo make a yearly pilgrimage to Blue Lake in the Sangre de Cristo (Blood of Christ) Mountains, their place of origin according to their "creation myth" (story of their origin). Some groups consider themselves as equal to nature, with both being under the power of God. Such a view holds that humans should work as God's stewards on earth, managing it with care. Many East Asians, influenced by the religious philosophy of Chinese Taoism, believe that people should live in harmony with nature and that all major decisions concerning the design and orientation of businesses and homes must be made in this context. Specialists called *geomancers* are consulted in these matters and their skill is called *feng shui* (wind and water). As societies become more technological and secularized (non-religious), environment becomes subject to exploitation. Humans perceive that God has given them dominion over nature and that it is their right to subjugate it. This was an underlying principle in the nineteenth century concept of Manifest Destiny in the United States and is a key component of environmental attitudes of many Brazilians toward the Amazon rainforest.

Some areas, because they are characterized by a multiplicity of elements related to a particular religion, can be viewed as integrated religious landscapes. For example, in Utah a Mormon landscape has evolved. Lancaster County, Pennsylvania is the heart of a Pennsylvania Dutch landscape. New York City houses a Hasidic Jewish landscape. These similar regions are so permeated by religion as a total way of life that they become religious landscapes in their own right.

The influence of religious belief systems is pervasive in so many aspects of life. Studying the geography of religion not only fosters understanding of cultural variation but also encourages appreciation of commonalities among sacred beliefs, values and practices.

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Scales of Religious Diversity: A Learning Activity to Accompany *Geography of Religious Belief Systems*

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Introduction:

Geographers of religious belief systems study human/environment interactions, differences in the way earth space is occupied and organized, and the distribution of religions and religious behavior, including the spread and interaction of various religious systems. It is the latter subject that will be the focus of this learning activity.

Knowledge of the diversity of religious belief systems among peoples of the New World will be developed through a number of learning activities. A geographic perspective will be used to help students understand the diversity of belief systems in their respective communities and nations and in the Western Hemisphere.

Grade Level: Grades 9 and 10 (can be adapted to lower or higher grade levels).

Time Required:

Part or all of these activities can be used depending on the focus of a particular curriculum. The entire lesson can be used over a typical six week grading period or parts can be used for fewer classes.

Key Geographic Themes: Regions, movement

Key Geographic Concepts: Distribution, region, diffusion, acculturation, ethnicity, landscape, migration, core/hinterland, sense of place, enclave/exclave.

Objectives: As an outcome of this activity, students will understand:

Knowledge:

A. All people have some belief system, including religious and secular belief systems

B. Diversity characterizes religious belief systems of the hemisphere which contains examples of every type of religious belief system in the world, including the universalizing, ethnic, and syncretic types.

C. The distribution of major religious groups of the Western Hemisphere and selected minority groups

D. Regionalization of specific religious systems such as Mormon

E. That the religious/cultural patterns of one's community are part of the geographic and historical process of settling of the New World by Europeans, the removal and/or assimilation of most native populations, and the forced migration of Africans to the New World

F. The material culture of specific religions

Skills:

A. Finding relevant places on maps or in atlases

B. Acquiring geographic information about people and their religious affiliations

C. Expressing information about religious behavior and material culture in a geographic manner

D. Interpreting geographic expressions of religious information in a meaningful manner

E. Communication skills, both oral and verbal

Attitudes/Values:

A. Openness toward learning about different people in one's community and nation

B. Appreciation for the variety of ways people express their religious beliefs

C. Tolerance of diversity

D. Appreciation of freedom of religious or belief system expression

Materials:

A. Atlases (a classroom set or enough volumes for groups of students to use together)

B. Access to library resources on: 1) population data for Western Hemisphere nations; 2) the religions and proportions of the population affiliated with each religion for each nation; 3) historical and cultural characteristics of religions of interest; and 4) appropriate geographical and historical characteristics of the nations of interest.

C. Large blank wall map of the Western Hemisphere or two blank wall maps of North and South America with all the nations marked clearly. Laminate these and mark them with a water-based instrument. They can be used over and over again.

D. Large laminated blank wall map of a nation such as the United States for class focus.

E. Local telephone books

F. Maps of the local area

G. Map of the United States' denoting religious belief systems (Figure 4).

The Learning Activity

Activities are suggested for three different scales. Each is self-contained and can be used alone. Teachers can also easily make connections between each scale.

Learning Strategies:

The Hemisphere:

A. Assign individual students a country in the western hemisphere, approximately 35 independent nations.

B. Each student should research the religious affiliations of the population in each nation. Characteristics of the religions such as founder, tenets, and festivals and an historical sketch of how each religion became a part of that nation should be prepared.

C. Using a large bulletin board or a clear wall in the classroom, prepare a large map of the Western Hemisphere, with national boundaries clearly marked.

D. Now the class will mark the map according to the religious affiliations of the people of each nation. Dominant religions and minority religions should be represented, using a key or legend.

E. When the map is complete, ask students to study the distribution of the religions.

F. Have students write a short essay explaining the distribution. Then begin a discussion of why the distribution looks the way it does and how it got to be that way. Guide students toward the concepts of diffusion and region.

The Nation:

A. Separate the class into groups based upon the major religious belief systems in the hemisphere or in the nation under study using student research in the previous lesson, or the information in the accompanying essay.

B. Have the students research the origin, diffusion, and the present distribution of the religion(s) in their group.

C. Have students compare their own research to a map of religious belief systems for the nation. A map for the United States is included in this book. Students should investigate any differences. For example, minority religions such as Judaism, Hinduism, Islam, Native American faiths, and Caribbean and Latin syncretic faiths will not be represented on national maps because the majority of Americans (and Canadians) with a religious affiliation belong to a Christian group.

D. Students should discuss the relationship between the diversity of religions in their nation to the diversity of religions in the hemisphere and investigate the reasons for the similarities or differences they find.

Enrichment:

Student groups can select one religion and investigate the impact of that religion on the landscape, using ideas mentioned in the essay as a starting point.

The group can create a poster or three-dimensional display of their work. The project should have an accompanying report.

The Community:

Information on religious belief systems in local communities can be found in telephone directories, newspapers, and other local information sources.

A. Break the class into pairs or groups and have them create a chart showing the types of religions and the number of structures/congregations associated with them.

B. Comparing these charts, discuss the religious diversity in one's community as compared to the nation and to the hemisphere.

C. Using maps of the local area, have students locate the religious structures such as churches and other sacred buildings or sites.

Discuss the Distribution:

Are these structures associated with one religion clustered together or spread apart? Do the structures of different religions overlap or form different patterns? This approach can lead the students to an understanding of the ethnic diversity of their area, population densities, historical patterns of settlement and changing neighborhood characteristics.

Enrichment:

Take a field trip in your local area to examine religious elements in the landscapes. Have the students keep a journal and refer to it in the next class meeting.

Conclusion:

Tie together the various levels and types of material presented throughout the lesson activities. Emphasize the similarities between one's community and one's nation and then the hemisphere, then discuss what makes one's community unique and special. Secondly, pull together the concepts of migration and regionalization to explain the religious diversity of the Western Hemisphere and specific nations. Finally, help students to understand that diversity of religion and religious affiliations in their respective communities are important parts of appreciating the character of living in a nation of the Western Hemisphere.

References:

See the following series for more ideas and excellent reading material: *Religion in Human Culture Series*, Argus Communications, Niles, Illinois 60648

Women and Food in the Caribbean: A Study of St. Lucia

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The small, mountainous Eastern Caribbean island of St. Lucia offers an opportunity to explore the interactions between the Old World and the New World, especially in terms of its foods and methods of food preparation used by some rural women of the island. Not all women follow this traditional pattern of food preparation, but some still do.

Food Preparation

The traditional St. Lucian woman rises early in the morning. She starts a charcoal fire and prepares coffee from *gros cafe*, *ti cafe*, and *cafe zeb piant* plants. She sits on a three-legged stool, pounding fresh coffee beans with a small stone in order to break the pulp. She roasts the coffee beans over an open fire. Later the family drinks the fresh roasted and ground coffee, often laced with purchased brown sugar. Any remaining coffee is stored in a tin container and placed on a shelf in the kitchen.

The first step in cooking the day's meals is to obtain the ingredients. St. Lucians say they are "livin' from hand to mouth" because most of the ingredients for their dishes are derived from their own garden or provision grounds. Two popular sample recipes with local ingredients, *callalou* (*kallalou*) with crab meat and a crab gumbo recipe, written by Agnes Edgar, a St. Lucian, are presented in Table 1. The places of origin of the ingredients are offered in Table 2.

A mid-morning break is often accompanied by a drink of chocolate boiled with or without milk to which is added ginger, nutmeg, or cinnamon. The chocolate itself must be prepared beforehand. The seeds are removed from the pod and dried. After they are dry, they are put into a pot and placed over a fire to roast. The seeds are then pounded until they begin to "sweat," meaning that their oils are released. Finally the chocolate is rolled into a ball-shape or an oblong cigar shape. The chocolate is broken off the roll as required.

Coconut milk or some kind of fruit juice is sometimes taken during the late afternoon break. These beverages are served in a porcelain cup or a glass from a tray or saucer. Purchased biscuits (crackers), and cheese are served when they are available. A favorite sweet, called *tablet*, may be eaten next. It consists of pieces of coconut added to a syrup boiled from sugar, cinnamon, cloves and nutmeg. When thickened, the liquid is poured into a pan and when hardened the candy is broken into chunks. *Tablets* are commonly sold in the market or on street corners during the late afternoon after school.

The main meal is served in the early afternoon. The evening meal is generally the same as the main meal except that the portions are smaller. Sometimes it is the leftovers of the main meal, and when available, fresh fruit such as pawpaws (papayas), which are eaten fresh when ripe or boiled and eaten as a vegetable when green.

An evening snack might consist of biscuits and tea. In this case, the teas are "bush teas" because they are considered to have medicinal or magical properties. Knowledge of bush medicine has diminished among the younger generation in recent years.

TABLE 1

St. Lucian Recipes

Kallalou

1 dozen eddo (tannia) or dasheen leaves
seasoning (curry, black pepper, onions, garlic) to taste
1/4 lb. pickled meat, e.g. salt beef or pig tail or ham bone
8 ochroes
chopped spinach
2-3 crabs
1 tbsp. butter
1 pt. boiling water

Soak and cut up salt beef. Scald crabs and scrub well. Strip the stalks and midribs from leaves, wash and roll them. Wash and cut up ochroes and seasonings. Put all ingredients in a saucepan. Pour on boiling water and simmer until everything is soft--about 1/2 to 3/4 hour. Swizzle thoroughly. (Swizzle means to stir with stick which has three or four prongs at one end, basically the root system of a shrub. The top of the stick is rolled between the palms of the hands and the prongs stir the ingredients.) Add butter and serve when the whole is soft and well divided. Before you add salt taste the kallalou when cooked, because the beef might give it enough salt. If liked, remove crabs, pick out and return flesh to the kallalou before serving. This makes it easier to eat but is not a popular arrangement with most West Indians. Serve with pounded green plantain.

Note: Crabs are foul feeders (scavengers). On this account keep them for about a week in some place from which they cannot escape. Feed them on clean water, grass, and bread, and give them pepper leaves which act as a purge. When ready to use, plunge them straight into a fast boiling water, as this kills them at once. As soon as they are dead, break off the legs remove the body from the shell, and take out the little black sac or gall. Throw away the gall which clings to the shell. The eggs and fat may be used if liked and the flesh should be picked from the legs and body shell. St. Lucians enjoy land crab meat during the rainy season, especially from September through December.

Crab Gumbo

6 crabs
8 large tomatoes
1 onion
pieces of parsley
1 to 2 blades chives
1 red pepper without seeds
1 bay leaf
6 to 7 ochroes
2 tbsp. butter
salt to taste
water

Purge, scald, and thoroughly wash the crabs. Remove claws and take body from shell, discarding the gall, and break the body into four parts. Scald and skin tomatoes if liked. Wash and cut up seasonings and sliced ochroes. When all are well browned add bay leaf and enough water to cover, about 2 1/2 pts. Cover pot and simmer 1 hour. When cooked, mixture should be like thick soup. Serve in a hot tureen with rice.

TABLE 2

Kallalou and Crab Gumbo Ingredients by Place of Origin

New World	Old World	
land crabs	land crabs	okra
salt	salt	black pepper
tomatoes	onion	curry
red pepper	parsley	garlic
tannia	dasheen	pig tail/ham bone
spinach	spinach	salt beef
	bay leaf	dairy products
	chives	

The Origin of St. Lucian Foods

The diversity of foods on St. Lucia is apparent when they are sorted by place of origin, as they are in Table 3. The Old World has contributed a great variety of domesticated plants to modern West Indian cuisine.

A wide variety of ingredients appears in St. Lucian cuisine. A typical meal may consist of yams, boiled or fried plantain with imported brown sugar, boiled dasheen or taro, fish or meat, salad with finely sliced cucumbers, fresh carrots, beans, peas or boiled okra, and fruits including mango, soursop, golden apple and/or citrus. Coconut milk is used in desserts such as sherbets, frozen custards and rice puddings. Breadfruit in season are baked, boiled or parboiled and fried. Breadnuts are generally boiled or eaten fresh. Avocados and mangoes are plentiful, cheap and frequently used. Most St. Lucians can identify at least five types of mangoes, based on size, shape, texture and taste. Limes are a favored Caribbean fruit and frequently replace the lemon in the preparation of fish or shrimp cocktails, broiled chicken, melons and tossed salads.

The amount and variety of fruits and vegetables are dependent on the season, the actual presence of vegetables in the garden, and the financial situation of the family. The produce is almost always local, obtained from the kitchen garden or provision grounds. The family stores vegetables and fruits such as yams, cassava, dasheen, tannias, pumpkin, bananas, plantains and sweet potatoes in a basket in the kitchen. Arrowroot and Queensland arrowroot are important baby food ingredients. Several kinds of porridge are made. The roots of these plants are grated, strained, and the resultant starch is allowed to settle in a pot. The water is discarded and the starch is put out to dry in the sun. Later it is collected in a jar or container and placed in the kitchen for future use.

Condiments or "seasonings" (spices such as cinnamon, cloves, nutmegs, and white and black peppers) are stored in a tin with a secure lid. The leaves and other plant portions of medicinal plants are also stored in sealed containers for future use in a "bush tea." Edible plant seeds that are placed in bottles include cucumber seeds, ochroes, tomatoes, sweet peppers, pigeon peas, red beans, snake beans (a bean with a pod that is about 2 feet long), salad beans, carrots, lettuce, cabbages, celery, pumpkins, coffee, corn and cous-cous (a yam relative).

Gardening

A dooryard garden encompasses the space around the home where useful plants are cultivated or tolerated. A wide variety of food plants and

TABLE 3

Representative St. Lucian Vegetables & Fruits by Place of Origin

New World

corn
cassava
soursop
tannias
pumpkins
avocado pear
red bean (kidney)
arrowroot
cous-cous
cocoa
"bush teas" (medicine)
paw-paw (papaya)
tomato
chile "hot" peper (piquant)
sweet potato

Old World

yams
plantains
cane sugar
dasheen
cucumbers
carrots
peas (pigeon)
okra
mango
golden apple
bananas
citrus (orange, lemon, lime, etc.)
coconut
breadfruit, breadnut
lettuce
chicken
rice
cabbage
celery
coffee
Queensland arrowroot
cinnamon
cloves
nutmeg
castor bean

medicinal and ornamental plants are grown in the dooryard garden. The tasks of weeding, cultivating and harvesting are carried out by women. Tilling of heavy clay soils is done by men. Unlike the provision grounds, which may be subject to burning, the dooryard garden area is generally not burned to clear it for planting. Its fertility is maintained by refuse from the house and kitchen.

Every dooryard garden and provision ground contains banana plants, the principal export crop of the island. On banana days, those weekdays when the Banana Grower's Association buys the fruit for export to the United Kingdom, almost all able family members carry large pieces of sponge and twine to the provision grounds where most banana plants are cultivated. Bananas are selected by touch or ripeness and the bunch is measured with the cutlass for proper length, and cut, wrapped and tied. Women are most active in the harvesting of bananas and it is a common event that women carry 35 to 50 pounds of bananas bi-monthly to the banana shed for selection, weight, and registration for export to the United Kingdom. A common complaint is rejection of bananas. Banana rejects are usually tossed to the side of the shed and occasionally some are taken home for family use or for pig fodder.

Coconut palms are common elements of dooryard gardens and the provision grounds. Some people make copra; others say it is too much trouble and does not pay. Coconuts are collected by using a long stick or pole forked at one end for grasping and twisting the stem until the coconut falls. Often children are sent to climb the palms to obtain the coconuts. The coir is removed and either used for mattress stuffing or pillows. Sometimes coir is used as fuel. Coconuts are split and put to dry in the sun or in ovens away from the tropical rain showers. Sometimes the fire in the oven is not well-controlled and the coconut is burned, and a sickeningly sweet smell permeates the air. The dried copra is taken to the factory, where it is made into soap and other products. Women are actively involved in the process of splitting coconuts and removing the coir.

In St. Lucia, many rural and traditional women are deeply involved in the acquisition and preparation of food. This is a daily and continual activity involving the use of plants and animals obtained from the dooryard garden or provision ground environment. These plants, in turn, come from many locations in the Old and New Worlds.

Do You Know Where Your Next Meal Is Coming From?: A Learning Activity To Accompany *Women and Food In The Caribbean*

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Introduction: Drawing on the case study of daily life in St. Lucia, this learning activity examines the impact of the post-Columbian exchange on food habits in the New World. Maps and reference tables are used to identify linkages of cultural diffusion. Opportunities for application to students' own experiences are suggested.

Grade Level: Grades 7-12

Time Required: Three to four class periods

Themes/Key Ideas:

A. Location of places can be described using relative terms.

B. Movement involves linkages.

  Linkages involve transportation and communication networks.

  Linkages result in cultural diffusion.

C. Relationships exist among regions.

Concepts: Diffusion; culture

Objectives: Students will:

Knowledge:

A. Understand the terms "Old World," "New World," "post Columbian Exchange" and "cultural diffusion."

B. Identify major source areas for selected foods.

C. Examine food habits in a case study.

D. Relate observations from a case study to patterns of diffusion.

E. Explain diffusion of food items in terms of major historical events.

Skills:

- A. Locate places on maps.
- B. Acquire data from a narrative case study.
- C. Prepare a table based on data collected.
- D. Prepare a map to show linkages between places.
- E. Relate patterns on a map to historical events.

Attitudes/Values:

Consider the consequences of cultural diffusion.

Materials:

- A. Table 1: "Selected Domesticated Plants by Region"
- B. Map 1: "Major Agricultural Source Areas"
- C. Handout 1: "A Day in the Life of A St. Lucian"
- D. Worksheet 1: "Sources of Food: Case Study of St. Lucia"
- E. Blank world map; pencils; colored pencils
- F. Optional: Pictures or samples of food items mentioned in the case study; pictures of St. Lucia

Background:

The arrival of Columbus on the island of San Salvador in the Bahamas in October, 1492, marked a turning point in human history. Although Columbus himself held to the belief that he had landed on an island somewhere near Japan or China, he had in fact opened the door on a "New World." Of course the lands of the Western Hemisphere were not "new" to the cultures already well established there, but they were new to European explorers whose world view had previously been limited to Europe and parts of Africa and Asia.

Contact between Europeans and Native Americans led to change. Rapidly expanding empires and trade linkages led to an exchange of plant and animal products, skills and ideas, and other cultural traits. Such movement of culture from one region to another is known as "cultural diffusion." Throughout the Western Hemisphere European cultures dominated indigenous cultures, in many instances destroying local populations and their cultures.

In the islands of the Caribbean, especially, indigenous cultures have almost entirely been replaced by the cultures of European settlers and Africans brought as forced migrants. The impact of cultural diffusion is visible in many different aspects of daily life: in architecture, clothing, language, customs, and religions. It is also visible in that most basic of all cultural expressions: food.

This learning activity uses the foods from the basic diet of residents of St. Lucia, a small island country in the eastern arc of the Lesser Antilles, as a vehicle for examining the far-reaching impact of cultural diffusion between the Old World and the New World, diffusion known as the "post-Columbian exchange."

Learning Strategies:

1. On the chalkboard, write the terms "Old World" and "New World." Ask students to explain these terms. Continue this discussion until the students have developed a satisfactory definition. Referring to a large world map, ask students to identify which part of the map is known as the "Old World" and which part is known as the "New World." Ask students what historical event led to the use of these terms. Ask students what changes occurred as a result of the discovery by Columbus of the islands of the Caribbean.

2. On the chalkboard, add the terms "post-Columbian exchange" and "cultural diffusion." Lead students in a discussion of the types of products and ideas which were exchanged as a result of the contact between European cultures and those of the Americas. To help them relate the concept of exchange or diffusion, allow students to share examples of diffusion from their own experience, such as clothing fads, popular music groups and types of food.
3. Ask students how many of the foods which they eat are native to the Western Hemisphere. Present (either as a handout or by means of a transparency) Table 1: "Selected Domestic Plants by Region." Allow students time to locate a favorite food and determine its place of origin.
4. Distribute copies of Map 1: "Major Agricultural Source Areas." Direct students, working individually or in small groups, to locate and label on the map each of the regions identified in Table 1. Discuss foods that originate in each area. Take note of the relatively small number of food plants that are native to the New World.
5. Explain to the class that one of the ways in which geographers learn about a place is to collect data about that place. Direct students, working in small groups, to read Handout 1, "A Day in the Life of a St. Lucian." (Or, alternatively, assign the reading as homework.) As they read, have them make a list of each plant food item mentioned in the essay.
6. Now that the students have collected data about the food of the people of St.Lucia, they need to organize the data and present it in a manner that allows them to analyze their findings. Using the Worksheet "Sources of Food: Case Study of St. Lucia," direct students to classify the plant foods they have identified according to the area(s) of origin. Using a blank world map, have students locate and label St. Lucia. Then have students label each of the plant foods listed in their table on the map in the world region(s) from which the food originated. Once all foods have been labeled, direct students to connect each region to St. Lucia using colored pencils, one color for Old World foods, a second for New World foods.
7. Encourage students to examine the patterns revealed in their maps. Lead them in a discussion of how these foods may have arrived in St. Lucia from such distant places. For example, colonial settlers would have brought foods from Europe and the Mediterranean area. Colonial linkages would also have facilitated the movement of food products between different parts of colonial empires. Trade between the Caribbean and Africa would have led to further exchange.
8. Enrichment strategy Number One, while optional, is strongly recommended at this point.

Conclusion:

Ask students to discuss cultural diffusion. What are some consequences of cultural diffusion? Have consequences been good or bad? Have students again consider examples of cultural diffusion in their own lives. At this point they should be better able to identify and explain the effects of cultural diffusion in their daily lives.

References:

deBlij, Harm J. and Peter O. Muller. *Human Geography: Culture, Society, and Space*. New York: Wiley, 1986.

Fredrich, Barbara E. Food and Culture: Using Ethnic Recipes to Demonstrate the Post-Columbian Exchange of Plants and Animals. *Journal of Geography* 90, no. 3(January/February, 1991):11-15.

America Before Columbus. *US News and World Report*. 8 July 1991:22-38.

Enrichment Strategies:

1. Have students select recipes from cookbooks or magazines, and analyze the origins of the products included in the recipes. Refer to the *Journal of Geography* article by Barbara E. Fredrich (see Sources) for detailed instructions.

2. Direct students to write a parallel description of "A Day in the Life of ________," focusing on food preparation and use in their own families. Then follow the steps in the learning activity to classify and map the origins of the foods identified.

TABLE 1

Selected Domesticated Plants by Region

Old World Plants

North Central China into Central Asia

- Millet
- Buckwheat
- Oats
- Leek
- Pear
- Soybeans
- Cabbage
- Radish
- Plum
- Cherries
- Peach
- Persimmon
- Mustard
- Mulberry
- Apricot

Southernmost China to Upper Indochina/Thailand

- Citrus
- Banana
- Cabbage
- Litchi
- Yam
- Rice
- Cinnamon
- Mung beans
- Taro
- Tea
- Water Chestnut
- Tung oil

Mainland Southeast Asia

- Yam
- Rice
- Banana
- Almond
- Cardamom
- Taro
- Cucumber
- Black pepper
- Breadfruit
- Jackfruit
- Coconut
- Ginger
- Nutmeg
- Clove
- Sugar cane

Eastern India to Thailand

- Yam
- Taro
- Millet
- Sorghum
- Tumeric
- Banana
- Rice
- Peas
- Eggplant
- Kapok
- Mango
- Safflower
- Indigo
- Hemp

Northwestern India to Eastern Turkish Highlands

- Wheat
- Rye
- Oats
- Barley
- Lentil
- Peas
- Sesame
- Rapeseed
- Caraway
- Melon
- Poppy
- Saffron
- Turnip
- Onion
- Beets
- Carrots
- Hemp
- Pomegranate
- Pear
- Fig
- Apple
- Pistachio
- Grapes
- Tamarind
- Flax
- Walnut
- Quince

Mediterranean Rim

- Grapes
- Lentil
- Garbanzo
- Lettuce
- Fennel
- Olive
- Date
- Carob
- Garlic
- Parsley
- Parsnip
- Sugar beet
- Asparagus
- Broadbean

Eastern African Highlands and Sudan

- Wheat
- Millet
- Sorghum
- Barley
- Okra
- Cucumber
- Cotton
- Coffee
- Castor bean
- Kola nut
- Melon
- Yam
- Oil seed
- Oil palm
- Tamarind

West Africa

- Arrowroot
- Gourds
- Melons
- Millet
- Oil palm
- Rice
- Yams

New World Plants

Southern Mexico to N. South America

- Maize
- Amaranth
- Bean
- Squash
- Taro
- Avocado
- Chile pepper
- Tomato
- Cotton
- Guava
- Palm
- Vanilla
- Pineapple
- Agave
- Sapote
- Custard apple
- Anatto
- Jicama

Andean Highlands

- Pumpkin
- Strawberry
- Beans
- Quinoa
- Papaya
- Oca
- White potato
- Tomato
- Anu

Eastern South America

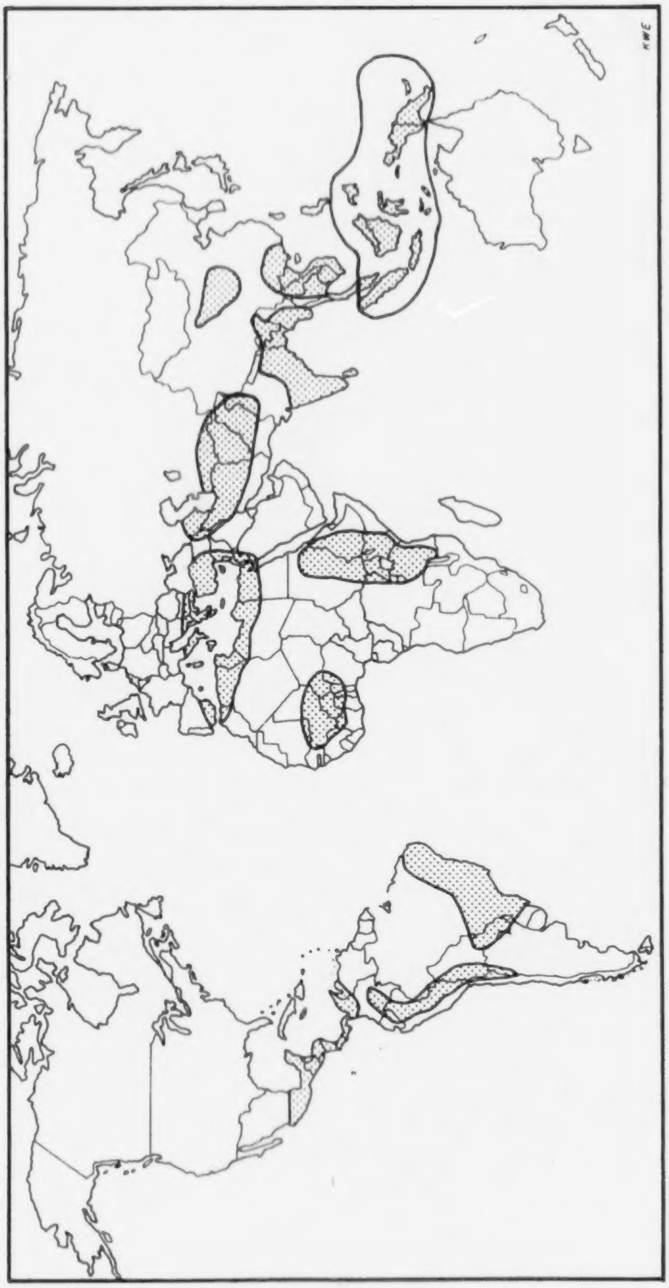
- Beans
- Manioc
- Peanuts
- Brazil nut
- Mate tea
- Cotton
- Cashew nut
- Cacao
- Taro
- Sweet potato
- Pineapple
- Passion fruit
- Rubber

Sources:

After J. E. Spencer and W. L. Thomas, *Introducing Cultural Geography*, 1969, pp. 143-144, in Barbara E. Fredrich, "Food and Culture: Using Ethnic Recipes to Demonstrate the post-Columbian Exchange of Plants and Animals," in *The Journal of Geography*, Vol. 90 No. 3 (January/February, 1991), p. 12.

Getis, Arthur, et al. *Introduction to Geography*, 1992, p. 206.

MAP 1



Major Agricultural Source Areas

de Blij and Muller. *Human Geography: Culture, Society and Space.* Copyright © 1986. John Wiley & Sons. Reprinted by permission of John Wiley & Sons, Inc.

Getis, Arthur. et.al. Introduction to Geography. Dubuque, IA: Wm. C. Brown Communications, Inc. 1991: 206.

HANDOUT 1

Women and Food in the Caribbean: A Day in the Life of a St. Lucian -- A Case Study*

Introduction

The eastern Caribbean island of St. Lucia is small (only 238 square miles), and largely mountainous. St. Lucian residents number over 140,000 and are descendants of Amerindians and African slaves (90 percent), East Indians, and British and French migrants from the 17th century to the present. St. Lucia gained independent status within the British Commonwealth in 1979. While English is the official language, a French patois is commonly spoken throughout the country. The predominant religion is Roman Catholic.

Early Morning Activities

Francine, a typical rural St. Lucian woman rises early in the morning. She starts a charcoal fire and prepares coffee from plants known as *gros cafe*, *ti cafe*, and *cafe zeb piant*, using all or a combination of these plants. Francine, like other women of St. Lucia, might typically be seen sitting on a three-legged stool, pounding fresh coffee beans with a small stone in order to break the pulp. Once roasted and ground, the coffee is stored in a tin container and placed on a shelf in the kitchen. Francine adds purchased brown sugar to the brewed coffee to sweeten its bitter flavor. Most members of the family, except the very young, drink coffee.

Meal Preparation

The first step in cooking is to obtain the ingredients. A majority of the ingredients are derived either from the kitchen garden or the provision grounds. The kitchen garden is the space around the house and kitchen (separate structures) in which plants are cultivated. The provision grounds is an area, generally far away from the house, in which certain crops are cultivated for home use as well as for market.

A variety of ingredients, primarily vegetables, appears in St. Lucian cuisine. A typical meal which Francine might prepare for her family may consist of yams, plantain (boiled or fried with imported brown sugar), dasheen or taro which is usually boiled, fish or meat, salad (generally made of finely sliced cucumbers, fresh carrots, beans, peas, or boiled okra), and some fruits including mango, soursop, golden apple and/or citrus varieties. St. Lucia boasts at least five types of mangoes, each with its own distinct size, shape, texture, and taste. In addition to being an ingredient in sauces for cooking, the milk of the coconut is used in desserts such as sherbet, frozen custards, and rice puddings. Breadfruit is boiled or parboiled and fried, when in season. Breadnuts are generally boiled or eaten fresh. Avocadoes and mangoes are plentiful, cheap, and frequently used. Limes are a favorite Caribbean fruit and frequently replace lemon in the preparation of fish, shrimp, broiled chicken, melons, and tossed salads.

The amount and variety of fruits and vegetables depends on the season, the actual presence of vegetables in the garden, and the financial situation of the family. Francine's family is fortunate. They have plenty of food which is almost always obtained locally from the kitchen garden or provision grounds.

Francine stores vegetables and fruits such as yams, cassava, dasheen, tannias, pumpkin, bananas, plantains, and sweet potatoes in a basket in the kitchen. She uses arrowroot and

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**This reading is adapted for student use from "Women and Food in the Caribbean," B. Fredrich, this volume.*

Queensland arrowroot to make food for her baby Caroline. She makes several kinds of porridge by grating and straining the roots of these plants. After the resultant starch has settled to the bottom of the pot, the water is discarded and the starch is put out to dry in the sun. Then Francine collects the starch, stores it in a jar or container and places it in the kitchen for future use.

Francine keeps the condiments or seasonings (spices such as cinnamon, cloves, nutmeg, and white and black pepper) in a container with a secure lid to protect them from the humidity of St. Lucia's climate. The leaves and other parts of medicinal plants are also stored in sealed containers. Francine uses these to prepare an herbal drink called "bush tea." She also stores edible seeds in bottles. Examples include cucumber seeds, ochroes, tomatoes, sweet peppers, pigeon peas, red beans, snake beans (a long bean about two feet in length), salad beans, carrots, lettuce, cabbages, celery, pumpkins, coffee, corn, and cous-cous (a yam relative).

Mid-morning Francine, like other women of rural St. Lucia, takes a break from her chores and enjoys a drink made from chocolate which has been boiled with or without milk. Francine adds ginger, nutmeg, or cinnamon to give flavor to her drink. Preparing the chocolate is one of Francine's regular tasks. To do this, she removes the seeds from the pods and dries them in the hot tropical sun. When the seeds are dry, she puts them into a pot which she places over a fire. After the seeds are roasted, Francine pounds them until the natural oils are released. Then she rolls the chocolate into a ball-shape or oblong cigar-shape. When she needs chocolate, Francine has only to break off a piece from the roll.

Francine's day is very busy. In addition to food preparation she takes care of her small daughter Caroline, keeps her house clean, and works in the kitchen garden where she grows many of the foods that her family eats. Occasionally she joins her husband Claude in the provision grounds, four miles from her house, where he grows crops to sell in the local market.

During the late afternoon, Francine prepares a refreshing drink using coconut milk or some kind of fruit juice. She serves these beverages in a porcelain cup or glass. When they are available, Francine also serves purchased biscuits (crackers) and cheese. A favorite sweet of Francine's older children, Mary and Robert, is called *tablet*. It consists of chunks of coconut added to a syrup boiled from sugar, cinnamon, cloves, and nutmeg. When thickened, the liquid is poured into a pan where it is allowed to cool. When hardened, the candy is broken into chunks. *Tablets* are commonly sold in the market or at street corners during the late afternoon, after school.

After the evening meal, Francine sometimes serves a snack of biscuits and tea. This tea is called "bush tea" because it is considered to have medicinal or magical properties. Francine learned to prepare "bush tea" from her mother. She hopes to share her knowledge of bush medicine with her daughters, but interest in traditional practices has diminished among younger generations in recent years.

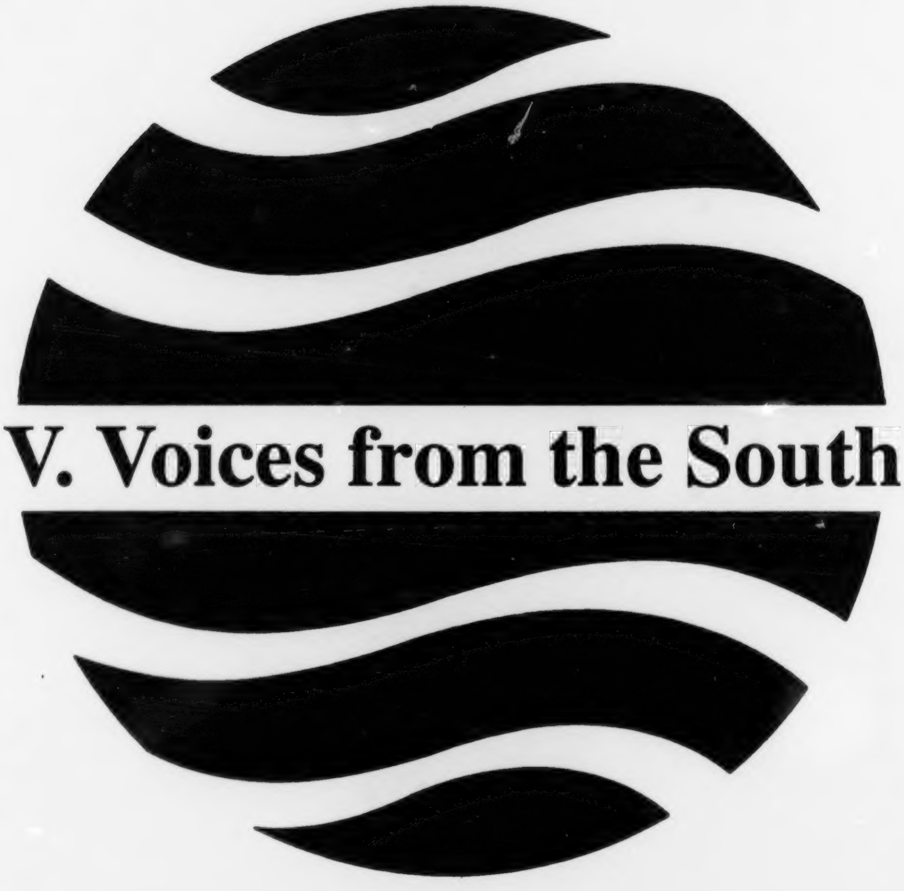
Conclusion

The place of origin of St. Lucia's fruits and vegetables is quite varied. Some of the foods are from the New World. But the Old World has contributed a great variety of domesticated plants to modern West Indian cuisine also. Many of these plants were important sources of food for slaves. Others were brought by traders and colonial settlers. All combine to make up the diet of the typical rural St. Lucian family of today.

WORKSHEET 1

Sources of Food: Case Study of St.Lucia

World Region	Old World	New World
North Central China into Central Asia		
Southernmost China to Upper Indochina/ Thailand		
Mainland Southeast Asia		
Eastern India to Thailand		
Northwestern India to Eastern Turkish Highlands		
Mediterranean Rim		
Eastern African Highlands and Sudan		
West Africa		
Southern Mexico to Northernmost South America		
Andean Highlands		
Eastern South America		



V. Voices from the South

Ciudades Primadas y Regiones en la América Latina*

Gary S. Elbow
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Por muchos años se ha considerado a la América Latina como una región netamente rural, por lo cual los geógrafos enfocaron sus investigaciones sobre topicos rurales tales como la agricultura, la ganadería, o la minería. Este interés en la vida rural se ve muy claramente en dos libros bien conocidos que se publicaron en el año 1942: Preston James, *Latin America*, y Robert Platt, *Latin America: Countrysides and United Regions*. En su contenido estos libros mostraron la realidad de su era; una época cuando la gran mayoría de las ciudades latinoamericanas eran lugares pequeños y de poca importancia. Sin embargo, a medianos del siglo veinte todo empezó a cambiar cuando las ciudades entraron en un período de crecimiento acelerado de población. En 1930, no había país latinoamericano que tuviera más de la tercera parte de la población en zonas urbanas. En 1950, más de la mitad de la población de las repúblicas de Argentina y Uruguay vivía en ciudades y, 40 años más tarde, solamente en los países Sudamericanos de Bolivia, Guyana, y Paraguay y los países centroamericanos de Guatemala, El Salvador, Honduras, y Costa Rica menos de la mitad de la población habitaba en zonas urbanas (Merrick, 1986; Population Reference Bureau, 1990).

Ciudades primadas

La gran parte del crecimiento de las ciudades latinoamericanas ha resultado de la migración rural-urbana, o sea, de personas, jóvenes en su mayoría, quienes se trasladan del campo a las ciudades, donde esperan encontrar trabajo y una vida mejor. En el año 1939 el geógrafo Mark Jefferson observó que en la mayoría de los países el crecimiento urbano se dirije a una sola ciudad o región metropolitana. Esta situación da por resultado una tasa de crecimiento desproporcionado de una sola ciudad con respecto a las otras ciudades de la nación (1939). Jefferson aplicó a estas ciudades el nombre de "ciudades primadas" y propuso una ley científica que dice: La ciudad principal de un país siempre es desproporcionadamente grande y excepcionalmente expresiva de la capacidad y sentimiento nacional. Generalmente, las ciudades primadas cuentan con más del doble de la población de la segunda ciudad del país. Un vistazo al mapa de la America Latina muestra que las ciudades primadas son características de la región. Se destacan entre estas ciudades primadas la Ciudad de México, posiblemente la ciudad más poblada del mundo, Buenos Aires, Lima, Santiago, Caracas y Montevideo. Cada una de estas ciudades es mucho más grande que cualquier otra ciudad de su país y está en primer puesto en casi todas las categorias de importancia. La ciudad primada atrae tanto la gente de otras ciudades de menor importancia como la gente del campo, contribuyendo de esta manera a su crecimiento y dominación de la red urbana nacional. Es un buen ejemplo de la regla: "Los ricos se enriquecen mientras los pobres se empobrecen."

La ciudad primada se destaca dentro del país. Con pocas excepciones la ciudad primada es la ciudad capital y la ciudad más cosmopolitana del país. Además, posee las universidades y bibliotecas más prestigiosas, los hospitales más respetados y mejor dotados de persona y equipo, la base industrial más fuerte, los bancos mejor financiados, y un sinnúmero de otros superlativos. Por supuesto, la ciudad primada cuenta con los edificios, parques, monumentos, y símbolos públicos más imponentes. Es el foco de las rutas nacionales de transporte y, especialmente en países pequeños, puede ser la única ciudad con un aeropuerto internacional. De esta manera es el primer lugar visto por los visitantes extranjeros y, en muchos casos, puede ser la única parte del país que llegan a conocer los visitantes que están por pocos dias.

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*Quisiera reconocer la valiosa ayuda de la Licenciada Liliana Anglada, quien revisó y corregió la versión castellana de este ensayo.

Se puede pensar que es una ventaja tener un solo centro en que se concentra lo mejor de todo el país. Sin embargo, las ciudades primadas tienen algunas desventajas, también. Por ser el centro de poder político y económico, sirve como un imán que atrae tanto los recursos económicos como la población. De esta manera, la ciudad primada adquiere los ingresos provenientes de las fincas, minas e industrias en las provincias y los invierte en su propio mejoramiento. Las autopistas que conducen a la ciudad primada pueden contar con cuatro carriles y pavimiento de primera clase al igual que en los países más ricos, mientras que las carreteras provinciales son senderos apenas transitables por vehiculos de doble tracción. Igualmente, las escuelas, los hospitales y hasta los servicios públicos orientados a las zonas rurales como la extensión agrícola son más grandes, mejor equipados, y cuentan con personal mejor entrenado en las ciudades primadas que en las ciudades de las provincias (Odell & Preston 1978). Odell y Preston llaman a este proceso "la economía explotativa," y Santos (1974) lo demonina "colonialismo interno." Cualquier sea el nombre que se utilice, la brecha creciente entre la ciudad primada y las provincias impide que las ciudades pequeñas y las zonas rurales logren desarrollar su potencial completo y contribuye al flujo constante de inmigrantes a la ciudad primada que, a su vez, enfrenta una lucha constante al tratar de proporcionar viviendas, trabajo y otras necesidades para una población que aumenta día a día.

Buenos Aires, el tema de la lección de Claudia Barros, es uno de los ejemplos mejores y más viejos de una ciudad primada en la América Latina. De acuerdo a lo que dice la historia del crecimiento de Buenos Aires podemos afirmar que dicha ciudad cuenta con uno de cada tres argentinos que habitan el país. Esta historia es típica de las ciudades primadas latinoamericanas. La Argentina es un país que ha sufrido todos los problemas del desarrollo desigual, aunque las diferencias entre Buenos Aires y las ciudades de segundo rango como Córdoba, Rosario, Santa Fé y Mendoza no son tan notables como en algunos otros países latinoamericanos. Hay dos libros buenos en Inglés sobre el desarrollo de Buenos Aires, Sargent (1974) y Scobie (1964).

Regionalismo

Fue el proposito de la política colonial de España en la América Latina fomentar los intereses del país colonizador. Fue por eso que se inhibió o prohibió el comercio y la comunicación entre las colonias. Las rutas de transporte se construyeron para trasladar los productos deseados por España desde las zonas de producción a los puertos designados para la exportación. No sirvieron para unir ni integrar las colonias españolas. A medida que pasó el tiempo familias o individuos locales lograron reunir suficiente riqueza y poder para dominar los centros administrativos aislados de las colonias. Después de la independencia estas personas y familias se compitieron para obtener control sobre los países nuevos. En algunos países como Argentina hubo guerras civiles. En otros casos colonias grandes se dividieron en países más pequeños. Tal fue el caso de Gran Colombia, de donde nacieron los países de Colombia, Venezuela, y Ecuador, y de Centroamérica, que produjo las cinco repúblicas de Guatemala, El Salvador, Honduras, Nicaragua y Costa Rica. Aún en los casos de las colonias que no se desunieron y dentro de los países nuevos que se formaron a partir de las grandes colonias, hubo conflictos entre los caudillos regionales. Repitidos movimientos sucesionistas en Yucatán, por ejemplo, reflejaron los intereses locales.

Para los geógrafos, "la región" es una de las estructuras conceptuales más sobresalientes. Dividen al mundo en áreas (regiones) que comparten algunas características importantes y las separan de otras áreas que no comparten dichas características. La gran mayoría de la gente es capáz de reconocer intuitivamente las regiones y puede notar cuando ha pasado de una región a otra. El regionalismo es un concepto relacionado a región. Es un sentimiento de la gente que reside dentro de una región que expresa que dicha área posee cualidades especiales e intereses distintos de los del estado (país) al cual pertenece. Cuando el regionalismo conduce al desarrollo de un sentido especial de "lugar" o del carácter singular de la región y a su integración como una parte distintiva y especial del carácter de la nación (por ejemplo, la región suroeste de Los Estados Unidos, o la de Bavaria en Alemania) puede ser un impulso bueno. Pero, a veces el regionalismo se expresa en la forma de tendencias separatistas o en los esfuerzos de una región por ejercer control sobre otras regiones o hasta sobre el país entero. En estos casos regionalismo puede conducir a conflictos políticos e inclusive a la guerra.

La lección escrita por la ecuatoriana Isabel Loyo proporciona información histórica que explica el desarrollo de regiones distintas dentro de ese país. Quito, la ciudad capital más antigua de la América del Sur, fue un centro urbano indígena antes de la conquista. Los españoles enfocaron sus esfuerzos colonizadores en la sierra, y escojieron a Quito como el centro administrativo principal para un área que abarcó todo el territorio del Ecuador moderno. Durante el siglo diecinueve en Guayaquil y en las áreas colindantes de la costa pacífica se desarrolló una economía a base de la producción destinada a la exportación en grandes fincas o plantaciones. Hacia el fin del siglo se desarrollaron fuertes sentimientos regionalistas en la costa , especialmente en la Ciudad de Guayaquil, y en la sierra, con centros en Quito en el norte y Cuenca en el sur. Durante el siglo veinte, las dos ciudades principales y sus regiones, es decir costa y sierra, han luchado por lograr la dominación de la economía nacional y, a través de la estructura de los partidos políticos, han tratado de controlar el gobierno nacional. Fuertes sentimientos regionalistas contribuyeron a disputas políticas divisivas. Afortunadamente, el regionalismo no condujo a movimientos separatistas, sin embargo, contribuyó a la inestabilidad política e impidió el desarrollo del país. En este sentido, el regionalismo ecuatoriano es típico de toda la América Latina.

Regionalismo y el desarrollo de las ciudades primadas

El Ecuador es uno de los pocos países latinoamericanos que no tiene ciudad primada (ver Odell & Preston 1978, para el ejemplo de Colombia). Quito, la ciudad capital, es la segunda ciudad en población. Guayaquil, la ciudad más grande, alcanzó primer lugar durante el siglo diecinueve.

¿Cómo se puede explicar la singularidad del Ecuador? La respuesta, por lo menos en parte, viene del desarrollo histórico de dos regiones distintas en el país (Morris 1987). En efecto, en el Ecuador hay dos ciudades primadas, cada una de las cuales domina la jerarquía urbana de su región de la misma manera en que una sola ciudad primada domina a su país. En el caso del Ecuador, la economía fuerte de la costa (comparada a la de la sierra) impidío que Quito pudiese ejercer su estado de capital político para dominar a Guayaquil y su región. Es posible que el Ecuador sea el primer país latinoamericano en que se desarrolló un par de centros regionales de importancia casi igual. Sin embargo hay varios casos semejantes de centros emergentes que pueden producir resultados parecidos en el futuro. Un ejemplo es Bolivia, donde Santa Cruz de la Sierra, la segunda ciudad en importancia ha superado a La Paz en su taza de crecimiento durante las décadas recientes. Santa Cruz todavía queda atrás de la capital en población, pero es probable que ofrezca mejores perspectivas económicas a largo plazo, especialmente en vista del desplome de la industria minera del Altiplano. Honduras presenta un caso parecido; San Pedro Sula domina a una región mucho más productiva que la de la capital, Tegucigalpa. A menos que la ciudad capital de estos países logre capturar una parte grande de la riqueza que producen las tierras bajas, es probable que descienda al segundo lugar en la jerarchía urbana. Nicaragua ofrece otro ejemplo instructivo. Managua, la capital nacional presente, se estableció en 1858 como una ciudad neutral entre los dos centros, León y Granada, que competieron para dominar al país. Durante el siglo viente, y especialmente durante el gobierno de los Somosa y el régimen Sandinista, Managua ha avanzado mucho más que los antiguos rivales debido a su capacidad de ganar control político y económico de todo el país (excepto de la zona caribeña). Hoy Managua es una verdadera ciudad primada que domina al país en todo sentido.

Estos ejemplos demuestran claramente las relaciones entre ciudades primadas y regionalismo. Donde el poder económico se ha mantenido al nivel regional, las ciudades grandes son capaces de crecer al punto de entrar en competencia con las capitales nacionales. Sin embargo en todo otro lugar las ciudades primadas utilizan su poder político para sacar provecho del capital que producen las economías regionales de tal manera que dichas ciudades crecen siempre más con respecto al resto del país.

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Buenos Aires: Población, Desarrollo y Futuro

Claudia Barros
Buenos Aires, Argentina

Objetivos:

Que el alumno logre:

Comprender el concepto de Ciudad Primada teniendo en cuenta su evolución histórica

Distinguir el crecimiento poblacional diferenciando entre la ciudad (dentro de sus límites administrativos) y su conurbano.

Analizar situaciones poblacionales a partir de datos cualitativos y cuantitativos (cantidad de población, superficie, densidad, etc.).

NOTA: Los alumnos que utilizan este ejercicio deberían tener 15 años o más.

Lección

La República Argentina se compone de 22 **provincias**, un territorio nacional (posiblemente futura provincia) y la Ciudad de Buenos Aires (su capital federal) ubicadas sobre la márgen derecha del Río de la Plata (mapa 1).

Buenos Aires es la **ciudad primada** del país. Su gran peso económico, su enorme cantidad de población, sus actividades culturales, educativas y recreativas hacen de esta ciudad una de las más importantes de Latinoamérica.

Su crecimiento en el tiempo

No siempre la mayor cantidad de población del país habitó en el área pampeana, en el principio del período colonial, el Noroeste era más poblado; pero cuando Buenos Aires se convirtió en la principal ciudad, nunca dejó de serla.

El puerto y el comercio fueron muy importantes para Buenos Aires. Estas actividades a veces no fueron legales y en algunas épocas se practicó el **contrabando**. En el siglo XVIII comenzó la exportación de cueros y luego la de carnes, cereales y lana; así Argentina se incorporó al mercado mundial. Podemos comparar a la ciudad con un **embudo** adonde llega la producción de la región pampeana para exportarse.

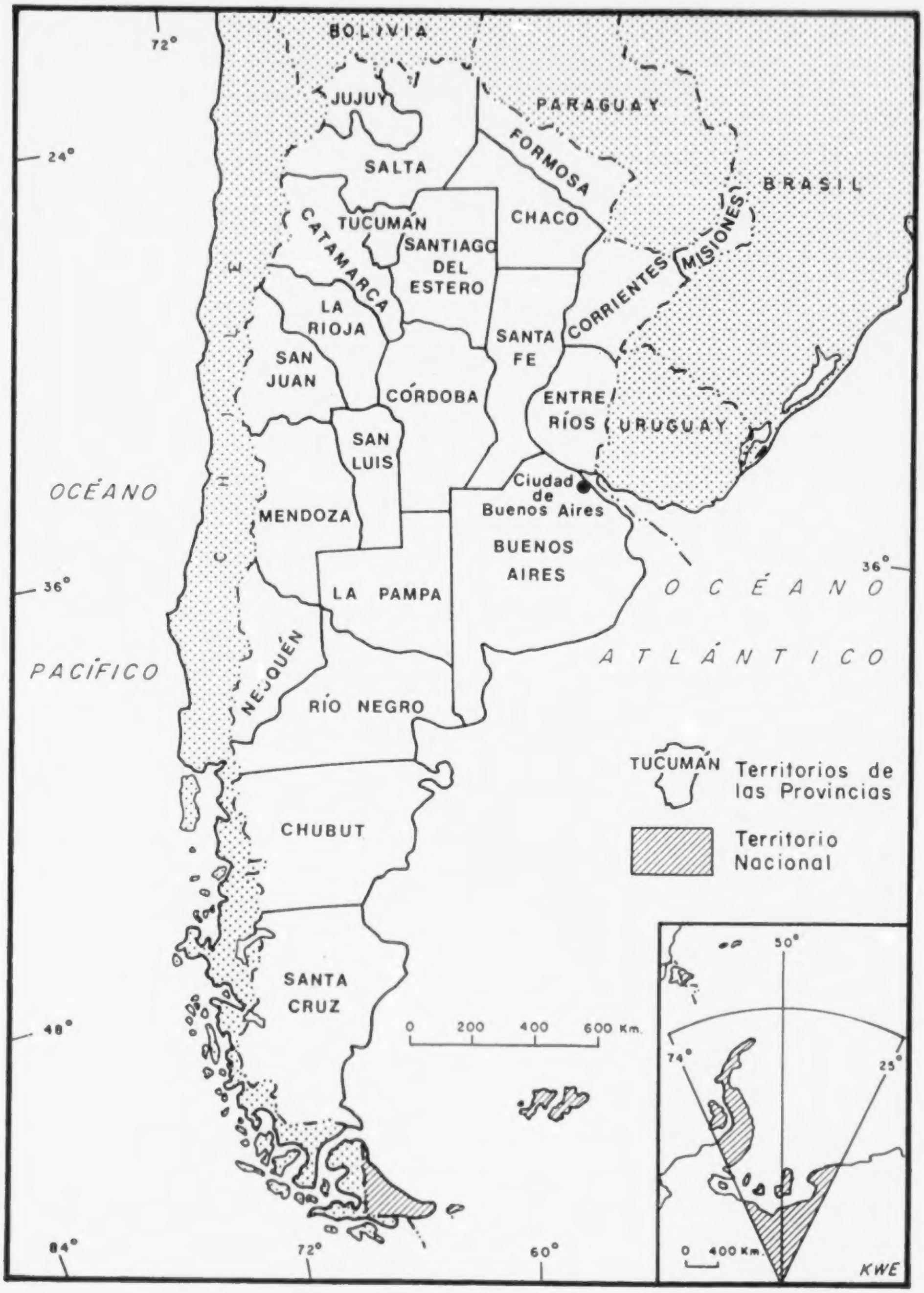
Con estas características de "ciudad que mira al exterior", en 1880, luego de grandes enfrentamientos"... Declárase capital de la República al Municipio de la Ciudad de Buenos Aires bajo sus límites actuales . . ." (Ley 1029. art. 1°).

Pero la población creció más allá de sus límites; es así que en 1884 se le agregaron dos nuevos barrios: Flores y Belgrano, de esta forma la ciudad logró sus actuales límites.

Entre 1869 y 1914 se produjo la gran inmigración de europeos, principalmente italianos y españoles. Estos nuevos habitantes, luego de un tiempo, compraron terrenos y casas en barrios más alejados del centro de la

MAPA 1

DIVISIÓN POLÍTICO-ADMINISTRATIVA DE LA REPÚBLICA ARGENTINA


BOLIVIA
PARAGUAY
BRASIL
CHILE
URUGUAY
JUJUY
SALTA
FORMOSA
CHACO
MISIONES
TUCUMÁN
CATAMARCA
SANTIAGO DEL ESTERO
CORRIENTES
LA RIOJA
SANTA FE
SAN JUAN
CÓRDOBA
ENTRE RÍOS
SAN LUIS
Ciudad de Buenos Aires
MENDOZA
BUENOS AIRES
LA PAMPA
NEUQUÉN
RÍO NEGRO
CHUBUT
SANTA CRUZ
OCÉANO PACÍFICO
OCÉANO ATLÁNTICO
72°
24°
36°
48°
84°
60°
36°
0 200 400 600 Km.
TUCUMÁN Territorios de las Provincias
▨ Territorio Nacional
50°
74°
25°
0 400 Km.
KWE

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ciudad como Linieres y Mataderos y tambíen en áreas fuera de los límites de la ciudad; así comienza a formarse el **conurbano**.

Además de la actividad del puerto, en el siglo XX se desarrolla la actividad industrial y Buenos Aires fue el principal centro. La industria atrajo población del interior del país y de países limítrofes a partir de 1930; ésto se conoce como la "nueva inmigración." Estos nuevos habitantes, continuando con la tendencia anterior, se instalan más allá de los límites de la ciudad. Así el conurbano fue cada vez más importante (mapa 2).

Actualmente, la mayor cantidad de **población económicamente activa** de Buenos Aires trabaja en el sector terciario (comercio y servicios). Esta tendencia se produce junto con la declinación de la industria a partir de la década del '70.

Evolución de la Población de la Ciudad de Buenos Aires y su Conurbano (miles de habitantes)

Año	1869	1895	1914	1947	1960	1970	1980	1991
Cd. de Buenos Aires	187	664	1,577	2,983	2,967	2,972	2,923	2,955
Conurbano	42	118	458	1,741	3,772	5,380	6,843	7,926
Area Metropolitano (Ciudad y Conurbano)	230	782	2,035	4,724	6,739	8,353	9,766	10,881

Como puede verse en el mapa 1B no debe confundirse a la ciudad dentro de sus **limites administrativos**, que fueron trazados hace más de un siglo y que hoy tienen valor para delimitar jurisdicciones, con la ciudad real (o verdadera) o sea la que ocupa todo el **área metropolitana**. Esta ciudad "real" incluye al conurbano, que si bien está fuera de los límites administrativos de la Ciudad de Buenos Aires, pertenece a ésta por sus actividades y su desarrollo en el tiempo.

El área metropolitana ocupa 1.124 km^2 y en 1991 vivían en ella aproximadamente 11 milliones de habitantes.

La situación actual.

En un país de, aproximadamente, 32 millones de habitantes (1990), un área metropolitana de 11 milliones de habitantes significa una desporporcionada concentración espacial de población. La mayoría de los países no desarrollados tienen esta característica y muchas veces la ciudad más importante coincide con el puerto principal como consecuencia de una economía exportadora de **materias primas**.

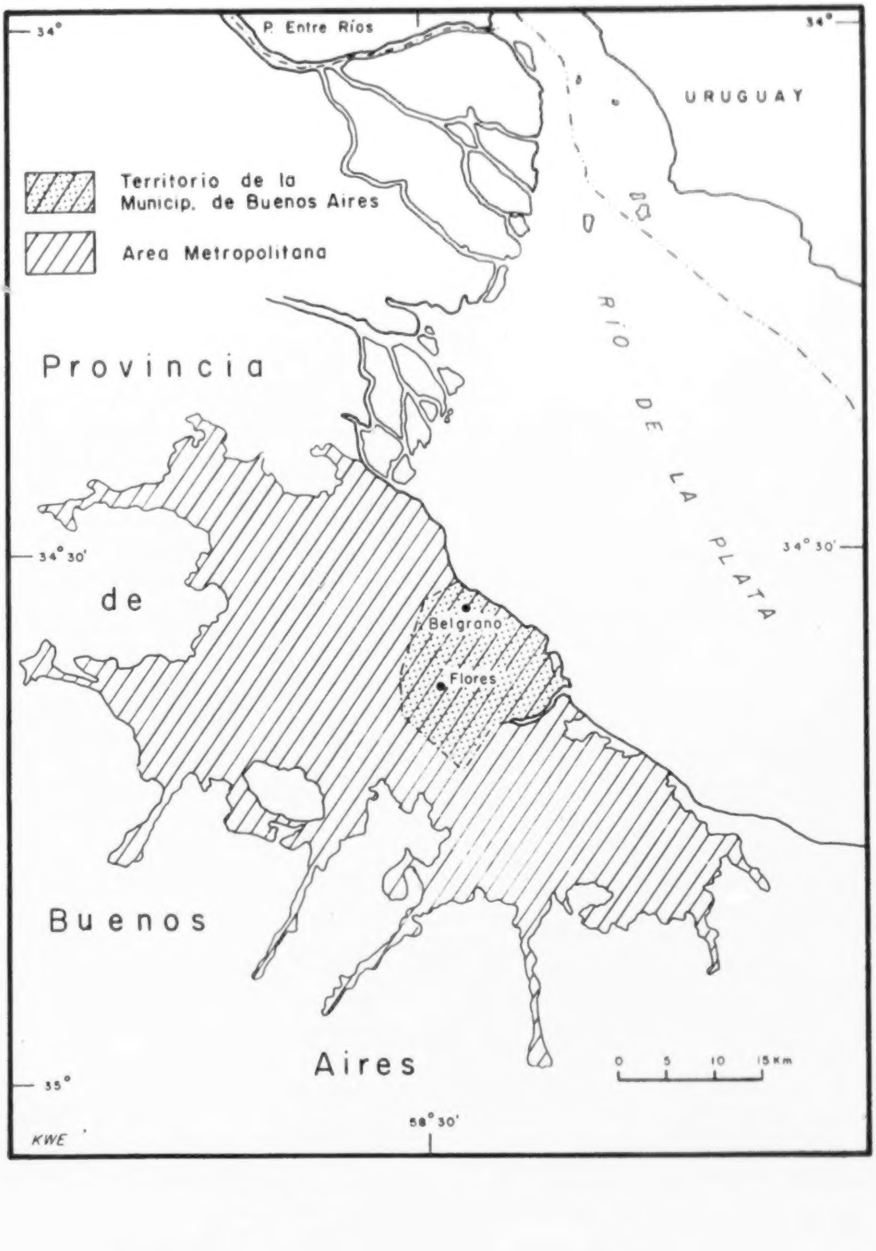
Comparando el área metropolitana de Buenos Aires con la de Córdoba (la segunda en importancia en el país) en cuanto a la cantidad de habitantes, puede notarse el enorme peso de la primera:

Comparación de Buenos Aires y Córdoba

Ciudad	Población	Porcentaje de la población nacional
Buenos Aires (área metropolitana)	10.881.381	37
Córdoba	1.000.000	3

MAPA 2

Detalle del área Metropolitana de Buenos Aires


34°
P. Entre Ríos
34°
URUGUAY
Territorio de la Municip. de Buenos Aires
Area Metropolitana
Provincia de Buenos Aires
RÍO DE LA PLATA
34° 30'
34° 30'
Belgrano
Flores
0 5 10 15 Km
35°
58° 30'
KWE

Muchos autores hablan de "macrocefalia argentina" ya que consideran excesivamente desarrollada a una ciudad como Buenos Aires en un país que tiene una densidad de 10 habitantes por kilómetro cuadrado. Otros opinan que lo incorrecto no es la cantidad de población del país, sino su distribución espacial.

El transporte: Ferrocarriles y carreteras

Seguidamente, algunos datos sobre el transporte mostrarán la supremacía de Buenos Aires. Esto mismo podría demostrarse tomando otros factores diferentes del transporte.

En el mapa 3 se ve que los principales ferrocarriles y carreteras convergen en Buenos Aires y que casi no existe interconexión entre importantes puntos del interior del país.

Los ferrocarriles conservan actualmente un trazado que concuerda con la función de trasladar las materias primas que produjo y produce el país hacia el puerto principal para su exportación. Estos ferrocarriles fueron construidos durante los siglos XIX y XX por compañías extranjeras, especialmente británicas.

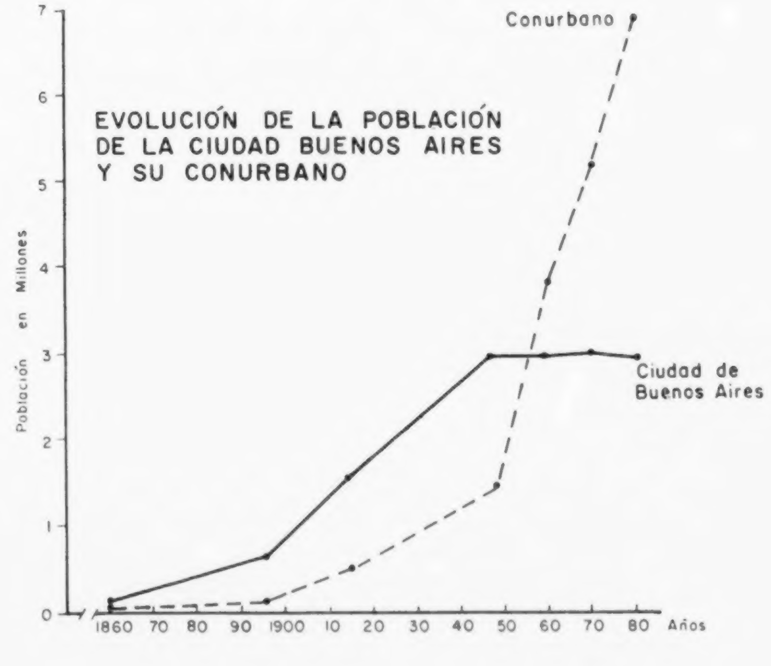
La red de transporte, que es el reflejo de la estructura económica, contribuye y a la vez, es causa de la concentración de población porque facilita el traslado de personas desde el interior hacia Buenos Aires. Este movimiento se dió con más fuerza cuando comenzó el desarrollo de la industria; los centros industriales del interior del país son pocos y de menor importancia que Buenos Aires.

Carreteras y ferrocarriles contribuyen a la imágen de embudo con la que fue comparada Buenos Aires frente a un interior relativeamente pobre.

La población de Buenos Aires y del país: Situación actual y tendencias

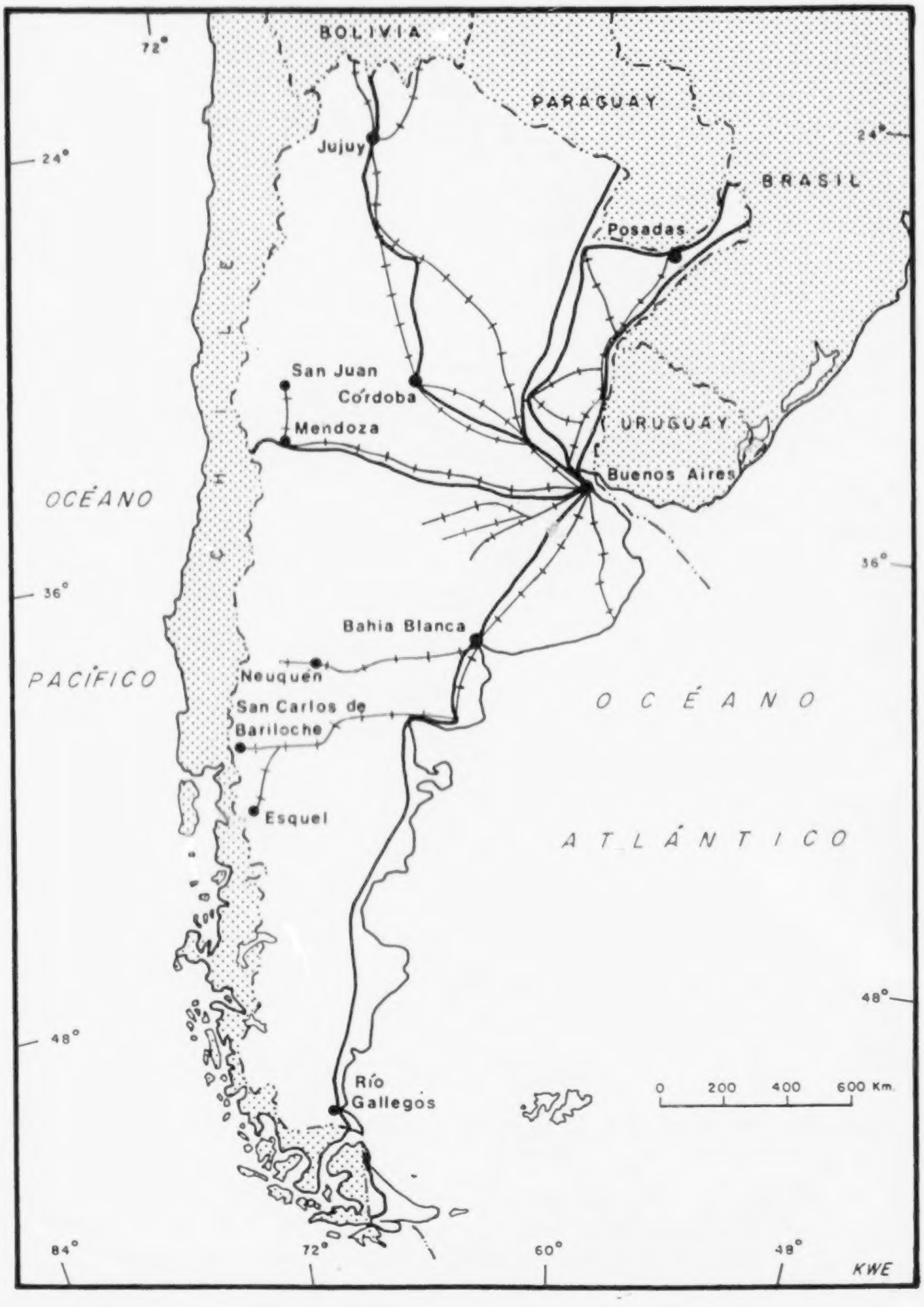
Del cuadro 1 puede inferirse una tendencia: desde 1947 la Ciudad de Buenos Aires ha perdido peso poblacional y lo ha ganado su conurbano. Por otra parte, el conurbano tiene posibilidades de ampliarse en el espacio.

CUADRO 1



MAPA 3

PRINCIPALES FERROCARRILES Y CARRETERAS LA REPÚBLICA ARGENTINA


BOLIVIA
PARAGUAY
BRASIL
URUGUAY
CHILE
Jujuy
Posadas
San Juan
Córdoba
Mendoza
Buenos Aires
Bahia Blanca
Neuquen
San Carlos de Bariloche
Esquel
Río Gallegos
OCÉANO
PACÍFICO
OCÉANO
ATLÁNTICO
72°
24°
36°
48°
84°
60°
0
200
400
600 Km.
KWE

Otra tendencia es que el peso relativo de la población del area metropolitana con respecto a la del país está disminuyendo. O sea que Buenos Aires no crece ahora como lo hacía hace treinta años.

Tampoco su población crece como la de otras ciudades latinoamericanas pero, en relación con ésto, la pobreza urbana es un problema menor que en Ciudad de Mexico o San Pablo (São Paulo), por ejemplo.

Aunque se encuentre en una etapa de relativo equilibrio, Buenos Aires es la principal concentración urbana del país y, según se prevé, no hay probabilidades de que ésto cambie en un tiempo relativamente cercano.

Para crear un centro de atracción en el interior del país, existieron proyectos de trasladar la función de capital. En el más reciente (1985) se intentaba establecer la capital en Viedma - Carmen de Patagones. Luego no se concretó.

Lo más importante es que para los estudios relacionados con la población, conviene tomar el concepto de ciudad real (o ciudad verdadera) y no ceñirse a los límites administrativos que en muchos casos, como el de Buenos Aires, fueron establecidos hace tiempo, cuando el área urbana era más pequeña.

Arthur Korn en su libro *La historia construye a la ciudad*, habla de un Gran Londres para referirse a lo que aquí se ha llamado ciudad real, o sea la que incluye áreas que no pertenecen administrativamente a la ciudad pero que poblacionalmente forman parte de ella. De la misma manera en la Argentina es común hablar del Gran Buenos Aires.

La población, al instalarse, no respeta los límites administrativos de la ciudad. Por ello, no se puede comprender ni explicar su evolución espacial y temporal considerando sólo la ciudad dentro de sus límites administrativos. Debido a ésto, este artículo se basó en el concepto de área metropolitana.

Esto, que es válido para Buenos Aires, puede ser útil para muchas otras ciudades del mundo.

Vocabulario

área metropolitana: la zona de influencia economíca y poblacional de una ciudad

ciudad primada: una ciudad principal de un país cuando sea desproporcionadamente grande en población, poder económico, y influencia politica

conurbano: la zona bajo la influencia de una ciudad y que queda más allá de los limites administrativos

embudo: instrumento de forma cónica que se utiliza para introducir agua u otro líquido en una botella con garganta pequeña

límites administrativos: los límites de una ciudad establecidos por ley; la ciudad legal

población económicamente activa: la parte de la población mayor de 15 años de edad que trabaja o que hace alguna actividad que sea económicamente productiva

provincia: una división interna administrativa de un país (en la América Latina se usan los terminos departamento y estado en el mismo sentido.

Ejercitación

1) Análisis de densidad de población

Observe el cuadro 1. Calcule la densidad de la Ciudad de Buenos Aires para los diferentes años que figuran en dicho cuadro (superficie de la ciudad = 200 km^2). Realice el mismo cálculo para el área metropolitana (superficie = 1120 km^2, aproximadamente). ¿En qué sentido espacial disminuye la densidad de población del área metropolitana con respeto a la de la ciudad?

2) Comparación entre ciudades

Realice el siguiente cuadro comparativo entre Buenos Aires y la ciudad capital de su país o de su estado.

	Buenos Aires	Otra Ciudad
Población del área metropolitana		
Ubicación dentro del territorio nacional		
Porcentaje de la población del país que habita en el área metropolitana		

¿Puede establecer alguna similitud entre ellas?

3) Cálculo de distancias en el mapa.

Comparando el área metropolitana de Buenos Aires con una figura semicircular como la que sigue responda: ¿Cuál es el radio aproximado del área metropolitana? (Debe basarse en el mapa 2 con su escala)

4) Aplicación del concepto de ciudad primada

¿Puede considerarse a Buenos Aires como un ciudad primada? Fundamente su opinión con tres datos.

¿Puede considerarse a Washington D.C. como una ciudad primada? ¿Por qué si o no? ¿Es la capital de su estado una ciudad primada con respecto al estado? ¿Por qué si o no?

Bibliografia

Korn, Arthur. *La historia construye la ciudad*. Eudeba: Buenos Aires, 1963.

Los Andes y El Regionalismo en El Ecuador

Isabel Loyo Guillen
Quito, Ecuador

Plan de la Lección

I. Datos Informativos:

Períodos de clase, 2

Tema: Los Andes y El Regionalismo en el Ecuador

II. Introducción:

En el desarrollo del Ecuador ha pesado en forma decisiva el problema del regionalismo tanto en el aspecto económico como en el social, incluso a nivel de nación ecuatoriana.

Esta lección resume la información recogida en el ámbito nacional y hace un breve análisis de este fenómeno y sus repercuciones en los diversos aspectos del convivir nacional así como su distribución espacial.

Para facilitar el aprendizaje, no uso el lenguaje académico, los conceptos ampulosos, tampoco referencias dentro del texto. Espero que esta contribución sirva para difundir este fenómeno socio-espacial que en nuestro país es un freno a su desarrollo, se concientice el problema y se busquen las soluciones.

III. Objectivos:

A. Cognoscitivo: Caracterizar el regionalismo en las regiones y subregiones ecuatorianas.

B. Psicomotriz: Enlistar por escrito los problemas que genera el regionalismo.

C. Afectivo: Promover la unidad nacional mediante el estudio del tema.

IV. Material Didáctico:

Mapa Político de América

Mapa Físico del Ecuador

Cartel

Recortes de prensa

Titulares

Texto

V. Proceso Didáctico:

A. Actividades de preparación:

Interrogar a los estudiantes sobre vivencias personales sobre el regionalismo.

Inducir a los estudiantes a establecer si regionalismo y región son sinónimos.

Diferenciar las regiones naturales del país, sus costumbres y género de vida.

B. Actividades de Elaboración:

Enunciación del tema

Presentación del material (mapas)

Observación espontánea y dirigida

Exponer el origen del regionalismo

Indicar las causas de ese problema

Caracterizar las regiones del Ecuador

Establecer diferencias entre regiones, razonar sobre ellas

Establecer semejanzas entre regiones, razonar sobre ellas

Conclusiones

C. Actividades de comprobación:

1. Resumir en forma oral
    a. Las características de las regiones del Ecuador
    b. Razonar sobre las semejanzas y diferencias de las regiones
    c. Comentar sobre las causas y consecuencias del regionalismo en el Ecuador
2. Redactar el resumen escrito

VI. Contenido Científico:

A. El regionalismo
1. Entorno Geográfico
2. Causas
    a. Topográficas
    b. Etnográficas
    c. Económicas

B. Regiones
1. Sierra
    a. Centro Norte
    b. Sur
2. Costa
3. Oriente

4. Galápagos

D. Conclusiones

VII. Plan Síntesis

VIII. Diseño del cartel

XI. Fuentes

X. Actividades complementarias:

Los alumnos podrán enriquecer el tema con narraciones o anécdotas sobre el regionalismo.

Texto de la Lección

Introducción

El Ecuador es un país sudamericano ubicado en la costa del Océano Pacífico. La gran Cordillera de los Andes que sobrepasa 6.000 metros en los picos más altos atraviesa el país de norte a sur. Dentro de la Cordillera hay una cadena de "hoyas" o cuencas altas donde están situados los núcleos poblados más importantes. Quito (1,2 million de habitantes) la capital nacional ocupa una de estas hoyas a una altura de, aproximadamente, 2.800 metros sobre el nivel del mar. Cuenca, la tercera ciudad en población del país (300.000 habitantes) está ubicada en otra hoya en el sur de la cordillera andina.

Por su altura las hoyas andinas tienen un clima templado o frio. Las tierras se dedican a la crianza de ganado vacuno y ovejas, la siembra de papa, maíz, cebada, trigo, y otras plantas que soportan el frio de la sierra. La gran mayoria de la población indígena del Ecuador, aproximadamente 25 porciento de la poblacíon total, vive en la serranía.

La costa es una zona muy distinta de la sierra. Estas tierras tienen baja altura y clima tropical. La costa es la zona agrícola más productiva del país; existen grandes fincas dedicadas a la producción de banano, cacao, café, arroz, palma africana, y otras siembras tropicales de gran valor comercial. Guayaquil (1,5 million de habitantes) es la ciudad más grande del país y el puerto más activo. Es también el centro industrial-comercial más importante y la que domina la zona agrícola más productiva de la costa. La población es mestiza por la gran parte, sin embargo, en el norte viven grupos de gente de raza negra que representa más o menos el 10 porciento de la población total del país.

El declive oriental de la cordillera andina ocupa la extensión poniente de la gran cuenca del Río Amazonas. Durante muchos años esta zona fue poco atendida por los ecuatorianos y carecía, casi totalmente, de vías de transporte terrestre y de asentamientos humanos permanentes.

En el año 1967, el descubrimiento de yacimientos petrolíferos estimuló un rápido desarrollo del oriente, hasta el punto que permitió la apertura de una red vial y un sistema urbano incipiente. Nueva Loja, la ciudad más grande, creció de nada a una población de 25.000 habitantes en solo 25 años, al mismo tiempo, una fuerte corriente migratoria llevó miles de campesinos desde la sierra a las selvas amazónicas donde buscaron terrenos para cultivar. El resultado fue de un ritmo acelerado de colonización y tala de bosque tropical.

La población indígena que es nómada en su mayoría y casi sin contacto con el mundo exterior antes de la decada de los 60, también ha sido fuertemente afectada. Esta gente ha sido reducida a campamentos y sitios permanentes, mientras que la gran extensión de selva tropical en la que se ocupaba en la caza y la agricultura itinerante se han convertido en fincas de los colonos de la sierra.

Las zonas distintas, costa, sierra, y oriente comprenden las tres grandes regiones del Ecuador. El Archipiélago de Colón (Islas Galápagos) se considera una cuarta región insular, aparte de las tres regiones continentales.

El lector puede comprender fácilmente que existen:

Primero - Marcadas diferencias de clima, fisiografía, economía, y cultura entre las tres regiones.

Segundo - Estas diferencias, conforman la base para una división regional del país, contribuyendo durante muchos años al desarrollo de fuertes sentimientos de regionalismo.

Tercero - En algunas ocaciones intereses regionales sobrepasan los intereses nacionales causando problemas para la integración nacional.

Una clave importante para entender el origen de las divisiónes regionales ecuatorianas es la Cordillera de los Andes. Las tres regiones continentales están espacialmente contiguas pero brutalmente separadas por esta imponente Cordillera. La presencia de los Andes en el Ecuador ha determinado la existencia de un conjunto ecológico específico de tierras altas y bajas, con expresiones bastantes sensibles que han permitido unas vigorosas tensiones regionalistas.

La barrera andina separa las tierras bajas dando lugar a una región occidental marítima abierta sobre el Océano Pacífico y orientada a los intercambios intercontinentales y que se le conoce como "costa." Y una región oriental continental cerrada sobre la selva más vasta del planeta conocida como "oriente." De esta manera los Andes sin haber sido un obstáculo insuperable, ejercen una acción inflexible que ha reducido la unidad del espacio ecuatoriano.

Las diferencias físicas han contribuido al establecimiento de economías regionales más o menos independientes y al desarrollo de identidades culturales distintas, así cada región tiene un conjunto complejo de características distintas y únicas.

Interrelaciones regionales

Para entender el origen de las regiones ecuatorianas (sierra y tierras bajas costa y oriente) y de las relaciones entre ellas, es necesario aprender algo de la historia del país.

Período pre-colombino. Durante los tiempos pre-agrícolas, se nota la falta de interacción entre las grandes zonas ecológicas. La gente de este período vivió en caseríos pequeños localizados en las zonas de condiciones ecológicas más favorables. Más tarde, después del desarrollo de cerámica y agricultura, la población se dispersó por todo el espacio; en la etapa minero-metalúrgica (inmediatemente antes de la conquista europea), los pueblos indígenas fueron capaces de ocupar todo tipo de dominio ecológico donde era posible la agricultura.

En esta última etapa ya se desarrollaron intercambios breves pero regulares entre los Andes y las tierras bajas de la costa y el oriente. Entre los productos de intercambio se encontraron: 1) de la costa: cobre, oro, plata, esmeraldas, conchas, y pescado seco, 2) de la sierra: tubérculos, cestería, coca, oro, plata, y cerámica, 3) del oriente: oro, coca, canela, achiote, plantas medicinales, animales vivos, plumas, pieles y cestería.

Período de influencia europea. Después de la conquista española, se modificaron las relaciones entre regiones. Para entender estos impactos debemos presentar un poco de historia de la conquista y colonización del territorio que hoy comprende la Républica del Ecuador. La incorporación definitiva de las tierras ecuatorianas al imperio español costó aproximadamente diez años. El interés principal de la conquista y colonización española fue la de zonas más pobladas y ricas, las hoyas altas de la cordillera andina.

Los españoles conquistaron un imperio ya bien centralizado, lo que les permitió una fácil hispanización y un efectivo control de la fuerza de trabajo. Con la colonización europea, se introdujeron cambios fuertes en las interrelaciones entre la sierra y las regiones bajas.

Las relaciones sierra-oriente. Las relaciones entre estas dos regiones se dividen en tres períodos de importancia y duración desiguales.

1541-1600. Esta primera época vió una intensa conquista y, después, una explotación brutal del declive andino y su riqueza aurífera. Las minas de oro no eran grandes y se agotaron muy rápidamente.

> 1600-1767. Durante esta temporada en la alta amazonía se organizó una inmensa colonia eclesiástica bajo el control principalmente de los jesuitas y franciscanos, que se encargaron de evangelizar a los pueblos indígenas. Se terminó esta época con la expulsión de los misioneros jesuitas en 1767.
>
> 1767-1821. Hacía el final de la época colonial, se confirmó el abandono progresivo del oriente por parte de las autoridades de Quito (Ecuador), aunque se continúa ejerciendo autoridad formal. Durante este período y hasta la segunda mitad del siglo XX terminó casi por completo el intercambio económico, social, y migratorio entre la sierra y el oriente, que dejó la región amazónica aislada y abandonada.

Relaciones sierra-costa. En el momento de la conquista, las hoyas andinas fueron pobladas por grupos grandes de gente indígena. Esta población indígena sirvió como fuente de mano de obra para explotar la riqueza mineral de la sierra y también los declives cercanos. Se acabaron los depósitos minerales antes de 1640, los españoles se volvieron a la producción de tejidos, oficio bien conocido por la gente indígena desde los tiempos precolombinos. Durante el período colonial, Quito servía como una fuente importante de textiles para toda la zona andina.

Antes de la conquista española en la costa la población era menos que en la sierra y después desapareció casi por completo. Se estimó en el año 1780 que solamente 19 porciento de la población nacional estaba en la costa, mientras que en la sierra radicaba el 81 porciento. No fue hasta los fines del siglo XVIII que la demanda de mano de obra en las fincas de cacao atrajo una onda migratoria de trabajadores de la sierra a la costa. De este tiempo en adelante, la sierra sirvió como reservorio de mano de obra para las grandes fincas de la costa. Al final del período colonial ya existía una marcada diferencia entre la economía y población de la sierra y la economía y población de la costa. La sierra era una zona de haciendas donde la mano de obra vino de una población indígena residente de la región. Los obrajes de tejidos fueron controlados por familias descendientes de los colonizadores españoles, política y económicamente conservadores. El desarrollo de la costa dependió de la producción de cacao en grandes fincas o plantaciones. La mano de obra vino, como se ha notado, de la sierra, y el producto salió hacía mercados extranjeros.

Los cacaoteros de la costa, que dependían de mercados externos para vender su producto y de mano de obra importada para producirlo, desarrollaron perspectivas económicas y políticas muy distintas de las de la gente serrana. Los dueños de grandes extensiones territoriales y los comerciantes se apegaron al liberalismo y se ligaron al comercio inglés. Estas actitudes fueron acentuadas por la falta de interacción y comunicación entre las dos regiones.

Guayaquil funcionó como puerto para la exportación de los productos serranos destinados para el exterior, y para la importación de los pocos productos que llegaron desde afuera de la colonia. Esta función portuaria fue aumentada por los flujos migratorios y el cambio de pequeñas cantidades de mercancias entre la costa y la sierra. Sin embargo, por lo general, las dos regiones eran independientes la una de la otra en cuanto a la mayoría de los factores económicos durante casi toda la época de la colonia.

El período Republicano. En 1821, el Ecuador se liberó del yugo español pero a la misma vez el territorio nacional fue incorporado como una provincia de la federación de la Gran Colombia (con las provincias de Venezuela y Nueva Granada [hoy Colombia]). La federación de Gran Colombia cayó en 1830, dejando al Ecuador como país independente.

Con la independencia nacional surgió aún más fuerte corriente de regionalismo. El poder político cayó en manos de los serranos conservadores, quienes controlaron Quito, la capital nacional. En la costa el auge de la economía cacaotera y una demanda creciente para las maderas tropicales y otros productos de la zona estimuló la economía, atrajo más inmigrantes de la sierra, y fomentó las tendencias ya existentes de liberalismo económico y político.

Todo el período independiente pero especialmente durante el siglo XX, el flujo migratorio de serranos hacía la costa contribuyó a un crecimiento desequilibrado de población de tal manera que, para el año 1972, la costa contó con el 52.2 porciento de la población nacional mientras solamente el 45.3 porciento vivió en la sierra y el 2.5 porciento en el oriente.

Guayaquil superó a Quito en población e importancia económica hacía el fin del siglo XIX. Es allá donde se encuentra la industria más importante, el comercio más fuerte, y la producción agrícola más grande y rentable del país.

En Guayaquil durante el año 1841 se lanzó el primer navío a vapor en el Ecuador. Este barco y los muchos otros que le siguieron sirvieron para unir Guayaquil con otros puertos de la costa del río y del mar. Guayaquil, ubicado en el centro de este sistema de rutas navegables, empezó un período de crecimiento económico y demográfico acelerado, pero, las rutas navegables no unieron la costa con la sierra.

Las comunicaciones interregionales se hacían todavía al ritmo lento de la navegación de balsas o a lomo de mulas o indígenas obligados. No fue hasta 1908, en que se terminó la ruta del ferrocarril, cuando se unieron la costa y la sierra con comunicaciones rápidas y modernas. El ferrocarril sirvió para unir las dos regiones pero no rompió las tendencias regionalistas que azotaron al país; la construcción de caminos pavimentados durante las décadas pasadas tampoco redujeron esas tendencias.

Regiones ecuadorianas al fin del siglo XX.

El Ecuador contemporáneo presenta el desarrollo de un eje principal de comunicaciones entre las ciudades de Quito y Guayaquil en forma de una linea diagonal que demarca el corazón o área nuclear del país.

El Ecuador es un país bicéfalo, con dos ciudades grandes y de población casi igual; ofrece un contraste grande con la gran mayoría de los paises latinoamericanos en los cuales hay solamente una ciudad grande que domina al territorio nacional en forma política, económica, y cultural. Cada una de estas ciudades ecuatorianas grandes sirve como centro de una región más o menos grande dentro del país (ver el mapa de Regiones del Ecuador).

Guayaquil es la ciudad principal de la costa sur, también sirve como el centro industrial más fuerte y la principal plaza bancaria y financiera de la república. Quito, además de la importancia del gobierno nacional que allí radica, dispone de una importante función industrial relativamente diversificada. Si hablamos de influencia, a la ciudad de Guayaquil pertenece la mitad sur del país, mientras que a Quito le pertenece la mitad norte. La zona de influencia de Quito es mucho más extensa que la de Guayaquil y presenta grandes desigualdades de población puesto que el área bajo la influencia de Quito posee grandes espacios selváticos de la provincia de Esmeraldas (en el norte del Pacífico) y del oriente (las provincias de Succumbios y Napo).

En cuanto a la parte suroriental del país y los Andes meridionales, se presenta el caso de una autonomía regional parcial, polarizada por las ciudades de Cuenca y Loja. Esto quiere decir que esta parte suroriental del Ecuador forma una subregión que goza de cierta autonomía de las dos grandes regiones. Conviene también señalar que existen interpenetraciones en la zona de reparto de influencia de Quito y Guayaquil.

Conclusiones.

Como podemos ver la afirmación de la nación ecuatoriana es un fenómeno reciente, incluso debemos preguntarnos sobre su grado de culminación. Este gran suceso no está libre de cierta ambigüedad que se presenta en muchas formaciones nacionales subdesarrolladas y dependientes. No olvidemos que hasta la segunda mitad de este siglo, el Ecuador era un país fundamentalmente marcado por la dependencia de centros de poder hegemónicos, lo que explica que: siempre hemos vivido en función de las necesidades externas. En lo interno la existencia de espacios "retardados" y espacios "modernizados" reproducen de alguna manera las formas de dependencia que une la periferia dominada a los centros de las economías. Esta es un ejemplo del colonialismo interno de Santos o la economía explotativa de Odell y Preston (ver el ensayo introductorio escrito por Elbow).

A grandes rasgos podemos decir que la conciencia nacional ecuatoriana se expresa actualmente de manera muy poco unívoca en los diferentes grupos étnicos que componen su población. No hay nada de común entre el sentimiento de indianeidad, (propio de una parte de las masas rurales andinas o selváticas) sentimiento que en ocaciones va en la conciencia afianzada de pertenecer a otra nación disuelta. Un vago cosmopolitismo propio de ciertas fracciones de la clase dominante, sentimiento que refleja la invasión de modelos culturales y la subordinación de los intereses económicos. La escolarización, el desarrollo de los medios de comunicación social y la urbanización de la sociedad han contribuido a forjar en una parte de la población (clase media) un sentimiento nacional al que el doloroso conflicto con el Perú de 1940, en que perdió el país la tercera parte del territorio nacional, dió su dimensión trágica.

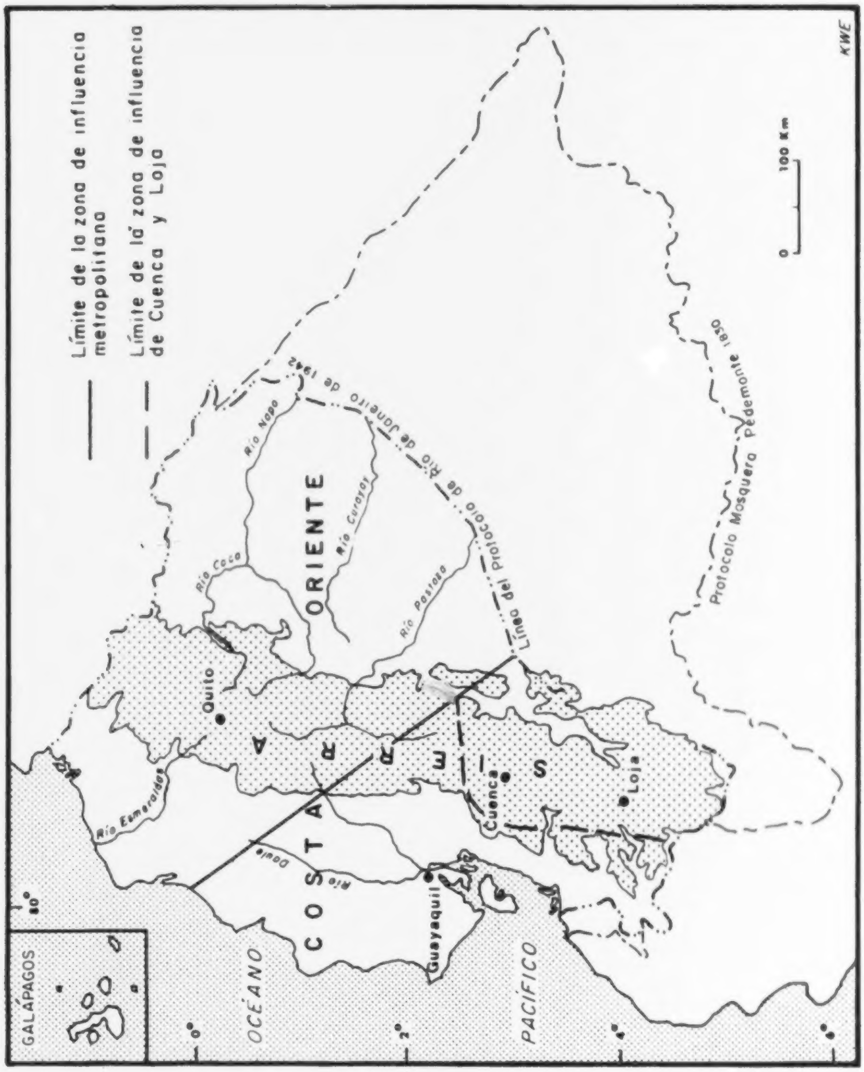
El sentimiento regionalista está vigorosamente arraigado y hace que uno sea primero y ante todo costeño o serrano. En ocaciones este sentimiento inclusive llega a ser localista y hace que uno sea primero carchense (una persona de la provincia de Carchi, en el norte extremo de la sierra) o cuencano (una persona de la ciudad de Cuenca). Además, cabe anotar que otra parte de las clases urbanas se siente "bolivariana," "latinoamericana" o "hispanoamericana" de pertenencia a una comunidad más amplia en lengua, historia y cultura. Si esta actitud hubiese emergido más temprano, y si hubiese sido aceptada por la mayoría de las clases dirigentes, es posible que el gran sueño bolivariano de unidad política para todos los páises hispanohablantes sudamericanos se habría podido realizar. Esto no pasó y el país sigue sufriendo de la competencia regionalista en especial entre costa y sierra.

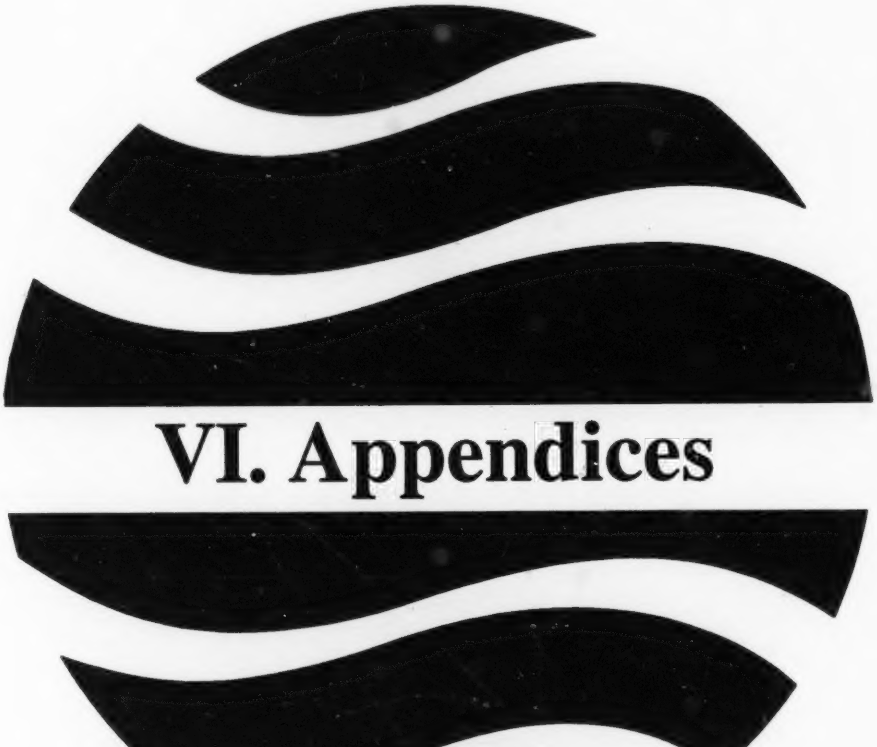
Plan Sintesis.
Los Andes y el Regionalismo en El Ecuador

REGIONES	-Costa	
(Características)	-Sierra	
	-Oriente	
	-Galápagos	
EVOLUCION	-Período precolombina	
	-Periodo de influencia europea	
	-Periodo republicano	
	-Periodo contemporáneo	
RELACIONES	-Sierra-Oriente	
	-Sierra-Costa	
ZONAS DE INFLUENCIA	-Centro-Norte	(Quito)
	-Sierra-Sur	(Loja-Cuenca)
	-Costa-Sur	(Guayaquil)
CONCLUSIONES		

MAPA 1

REGIONES DEL ECUADOR

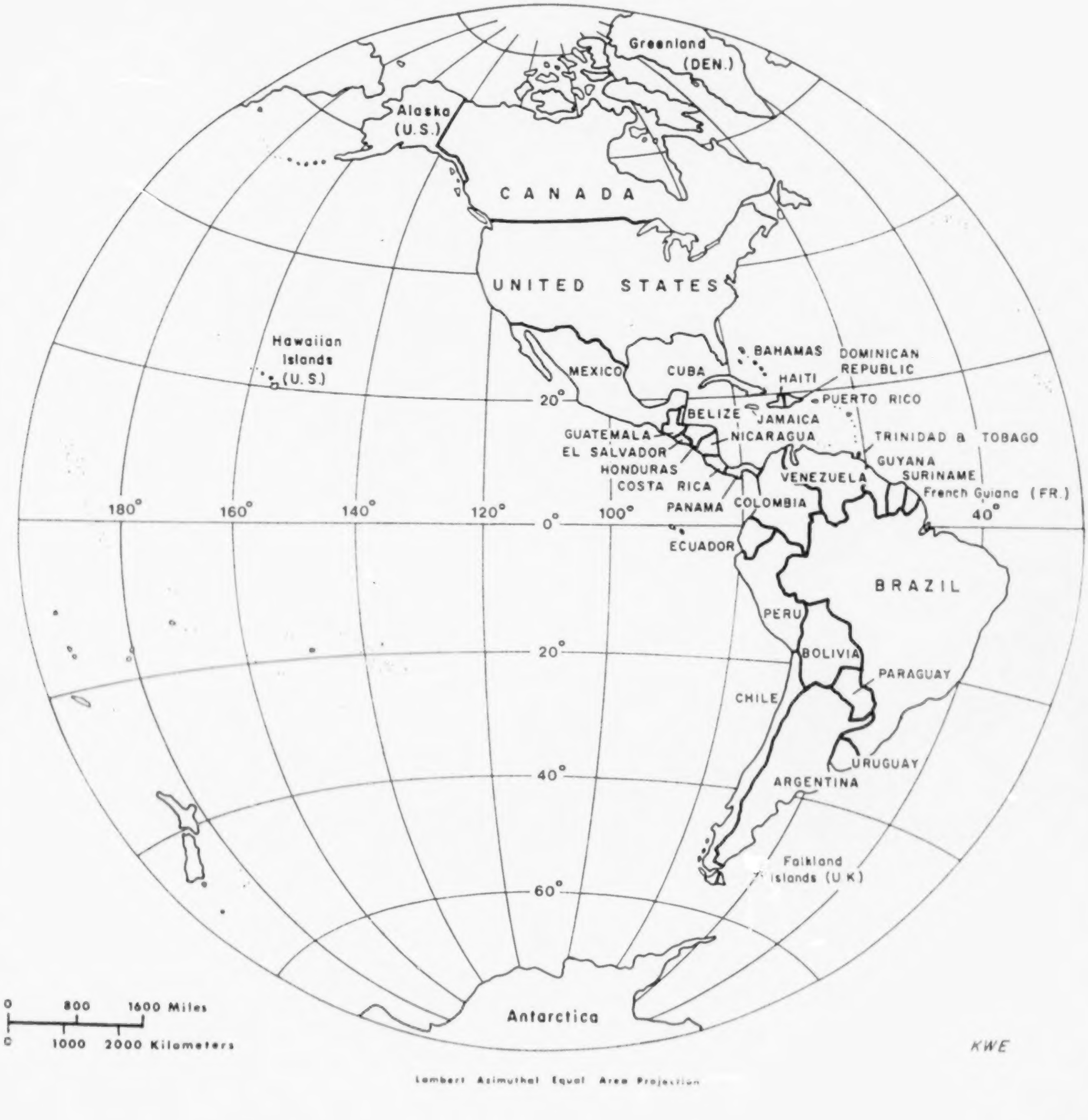

Límite de la zona de influencia metropolitana
Límite de la zona de influencia de Cuenca y Loja
KWE
0
100 Km
ORIENTE
Río Napo
Río Curaray
Río Coca
Río Pastaza
Línea del Protocolo de Río de Janeiro de 1942
Protocolo Mosquera Pedemonte 1830
SIERRA
COSTA
Quito
Cuenca
Loja
Guayaquil
Río Esmeraldas
Río Daule
GALÁPAGOS
OCÉANO
PACÍFICO
0°
2°
4°
80°



VI. Appendices

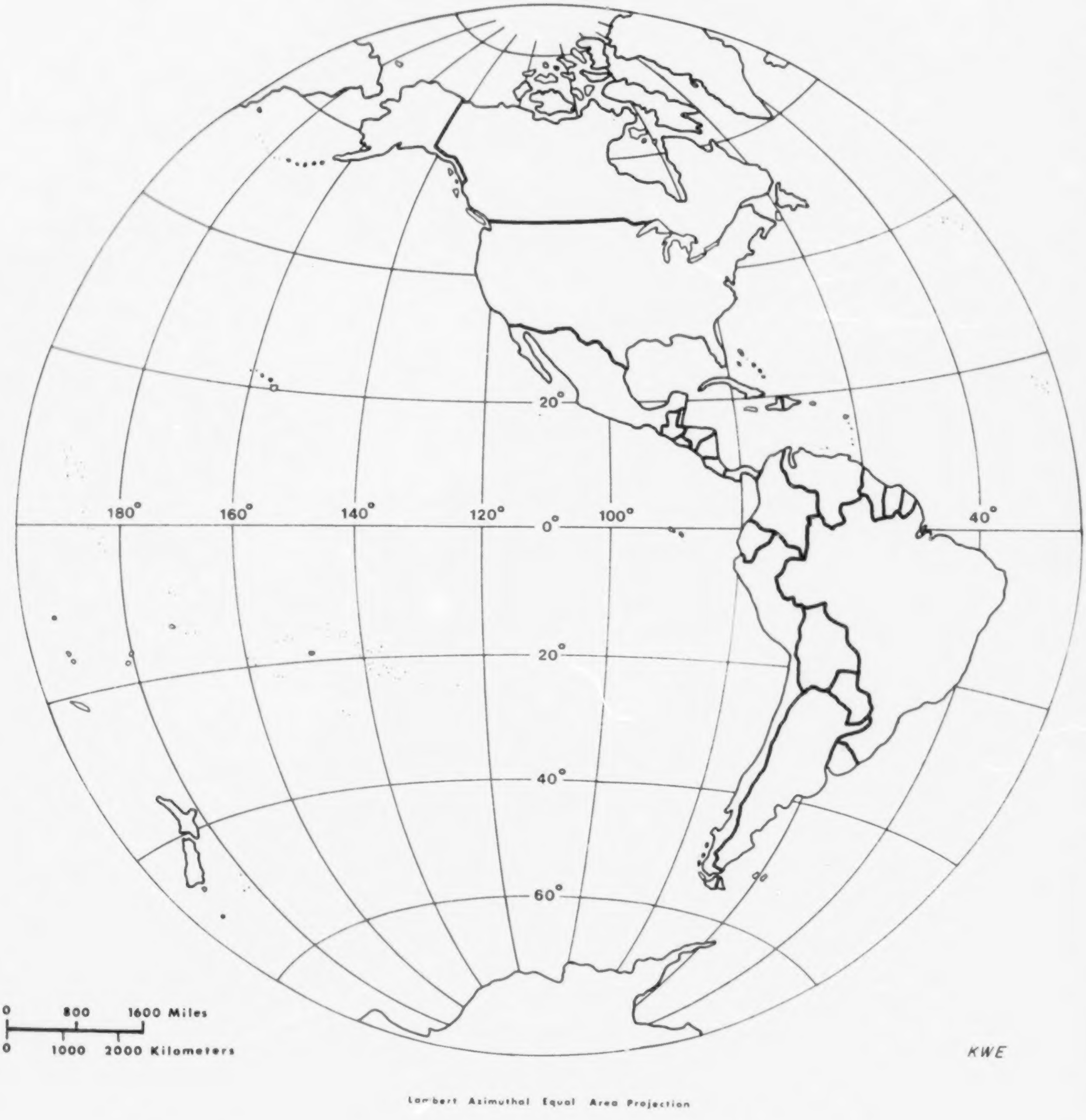
Appendix A: Outline Maps

Western Hemisphere


Greenland (DEN.)
Alaska (U.S.)
CANADA
UNITED STATES
Hawaiian Islands (U.S.)
MEXICO
CUBA
BAHAMAS
HAITI
DOMINICAN REPUBLIC
PUERTO RICO
BELIZE
JAMAICA
GUATEMALA
EL SALVADOR
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
TRINIDAD & TOBAGO
GUYANA
SURINAME
French Guiana (FR.)
VENEZUELA
COLOMBIA
ECUADOR
BRAZIL
PERU
BOLIVIA
PARAGUAY
CHILE
URUGUAY
ARGENTINA
Falkland Islands (U.K.)
Antarctica
20°
0°
20°
40°
60°
180°
160°
140°
120°
100°
40°
0 800 1600 Miles
0 1000 2000 Kilometers
KWE

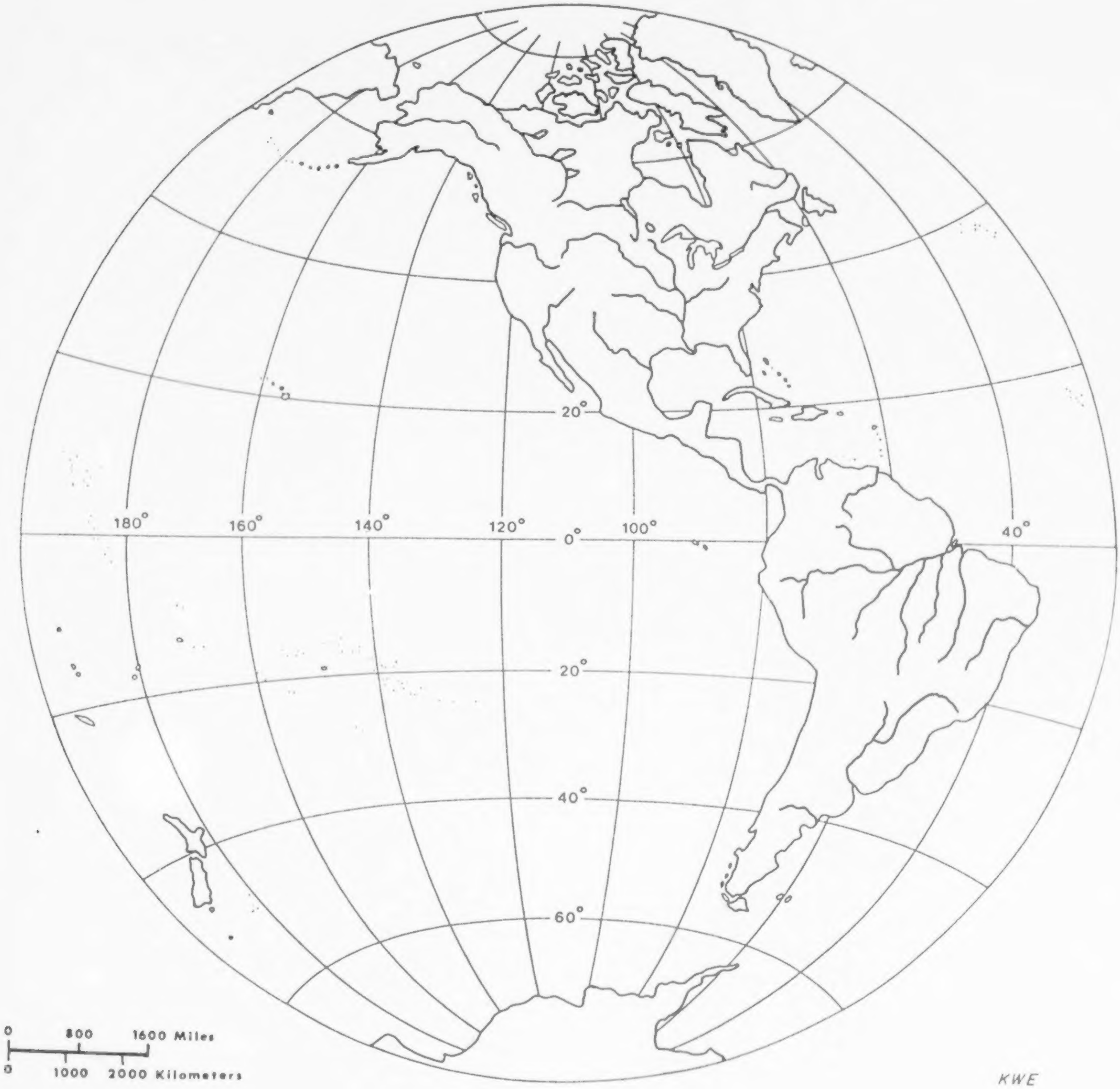
Lambert Azimuthal Equal Area Projection

Western Hemisphere


20°
180°
160°
140°
120°
0°
100°
40°
20°
40°
60°
0
800
1600 Miles
0
1000
2000 Kilometers
KWE

Lambert Azimuthal Equal Area Projection

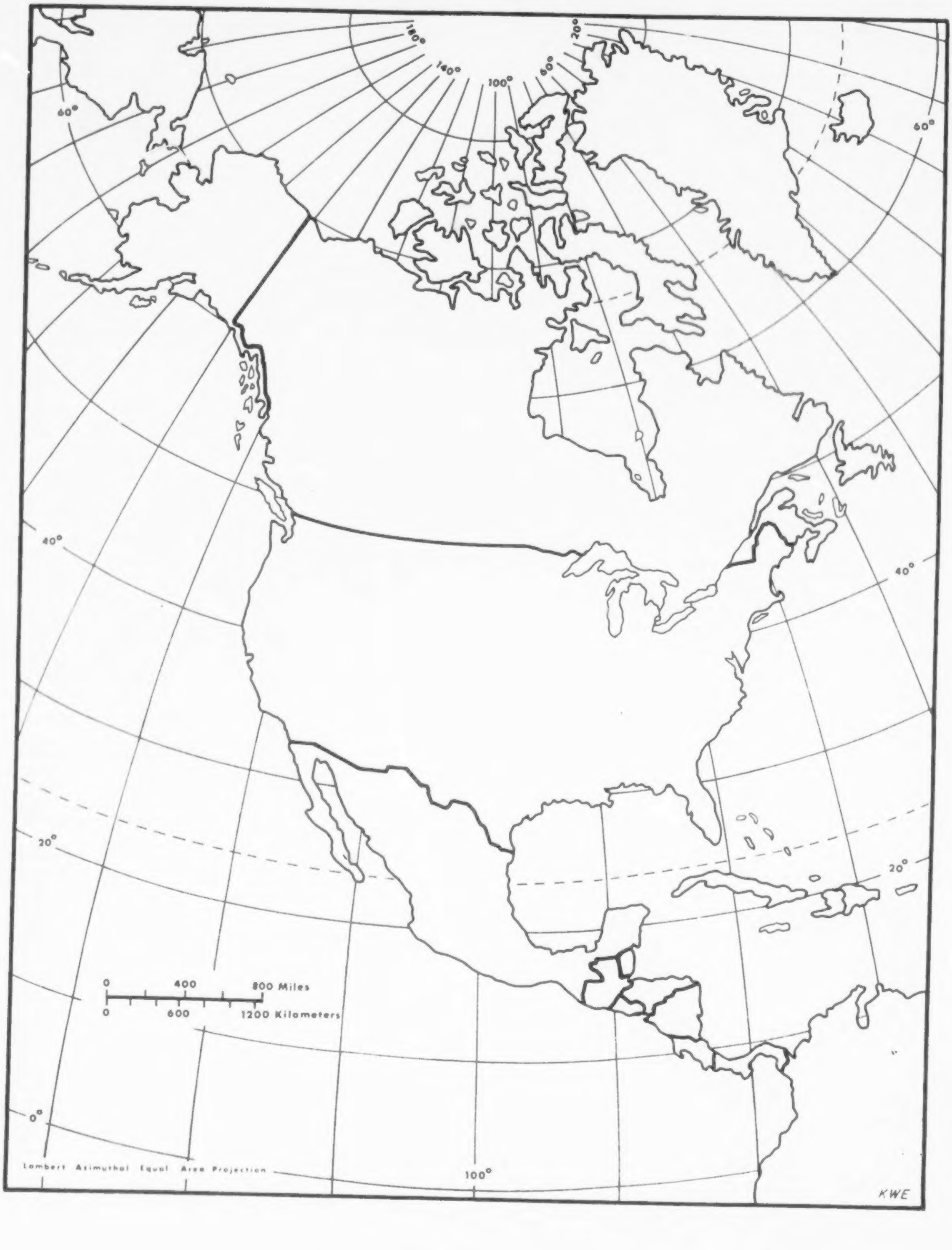
Western Hemisphere


20°
180°
160°
140°
120°
0°
100°
40°
20°
40°
60°
0
800
1600 Miles
0
1000
2000 Kilometers

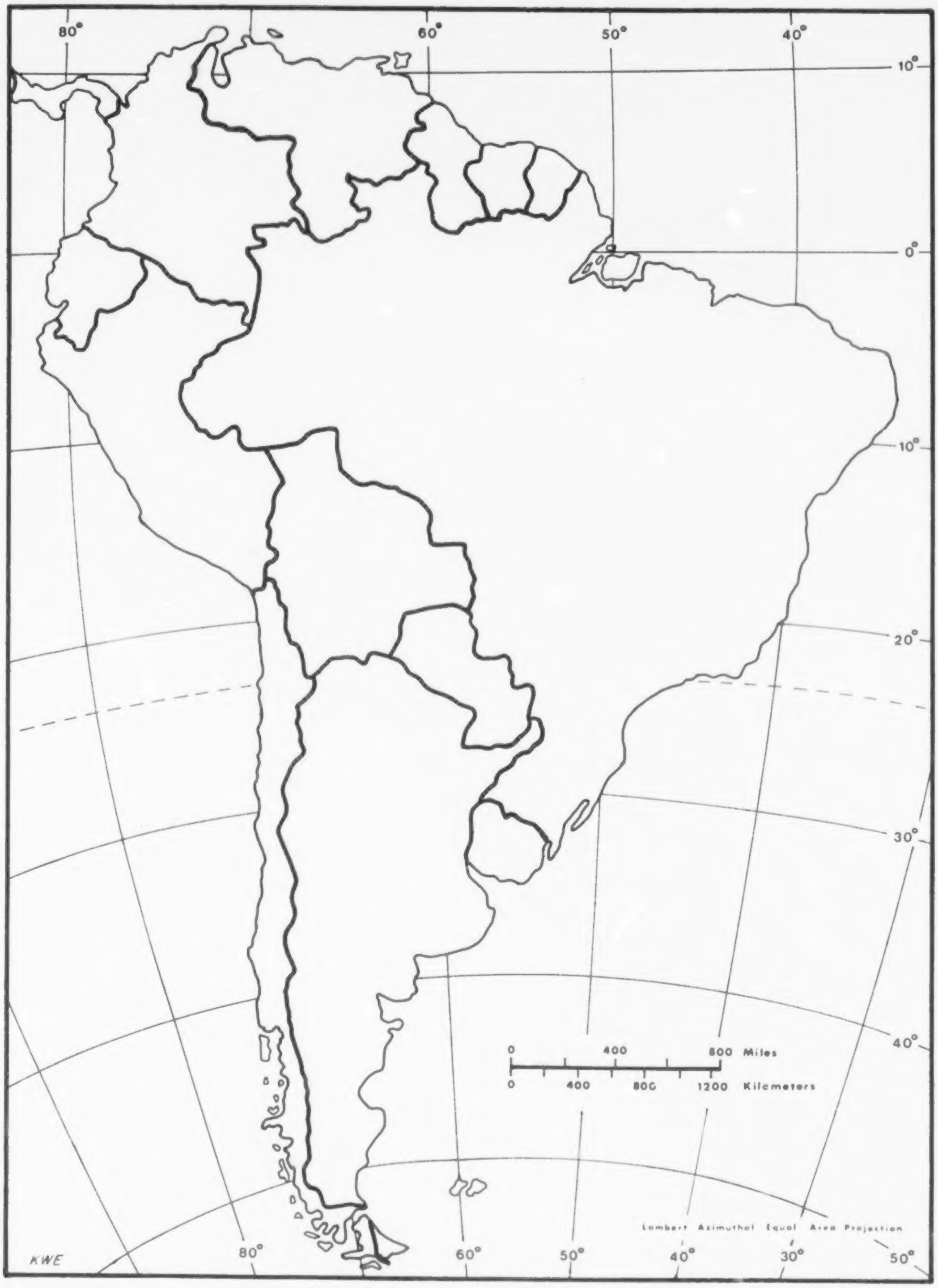
KWE

Lambert Azimuthal Equal Area Projection

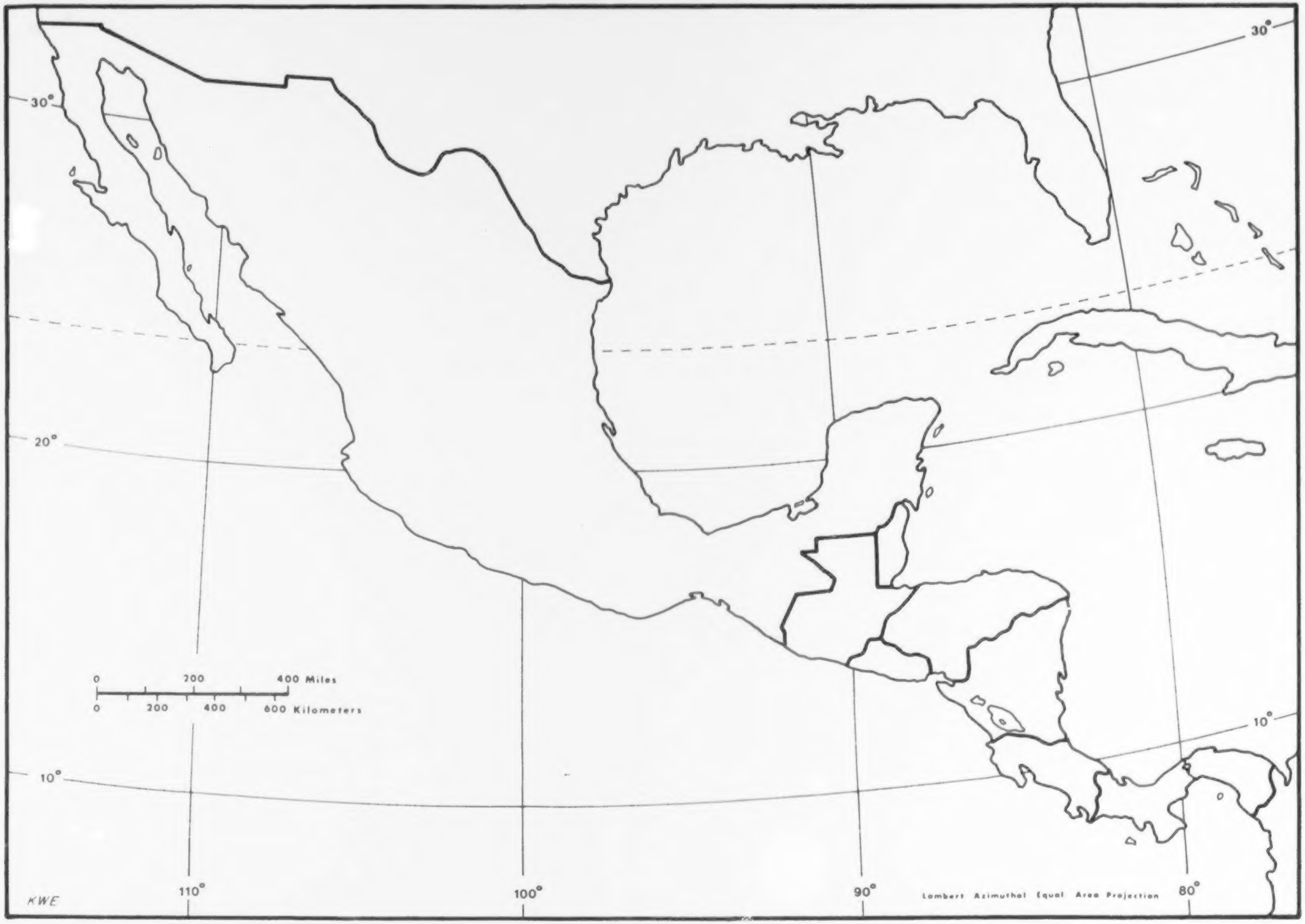
North America


180°
140°
100°
60°
20°
60°
60°
40°
40°
20°
20°
0°
100°
0 400 800 Miles
0 600 1200 Kilometers
Lambert Azimuthal Equal Area Projection
KWE

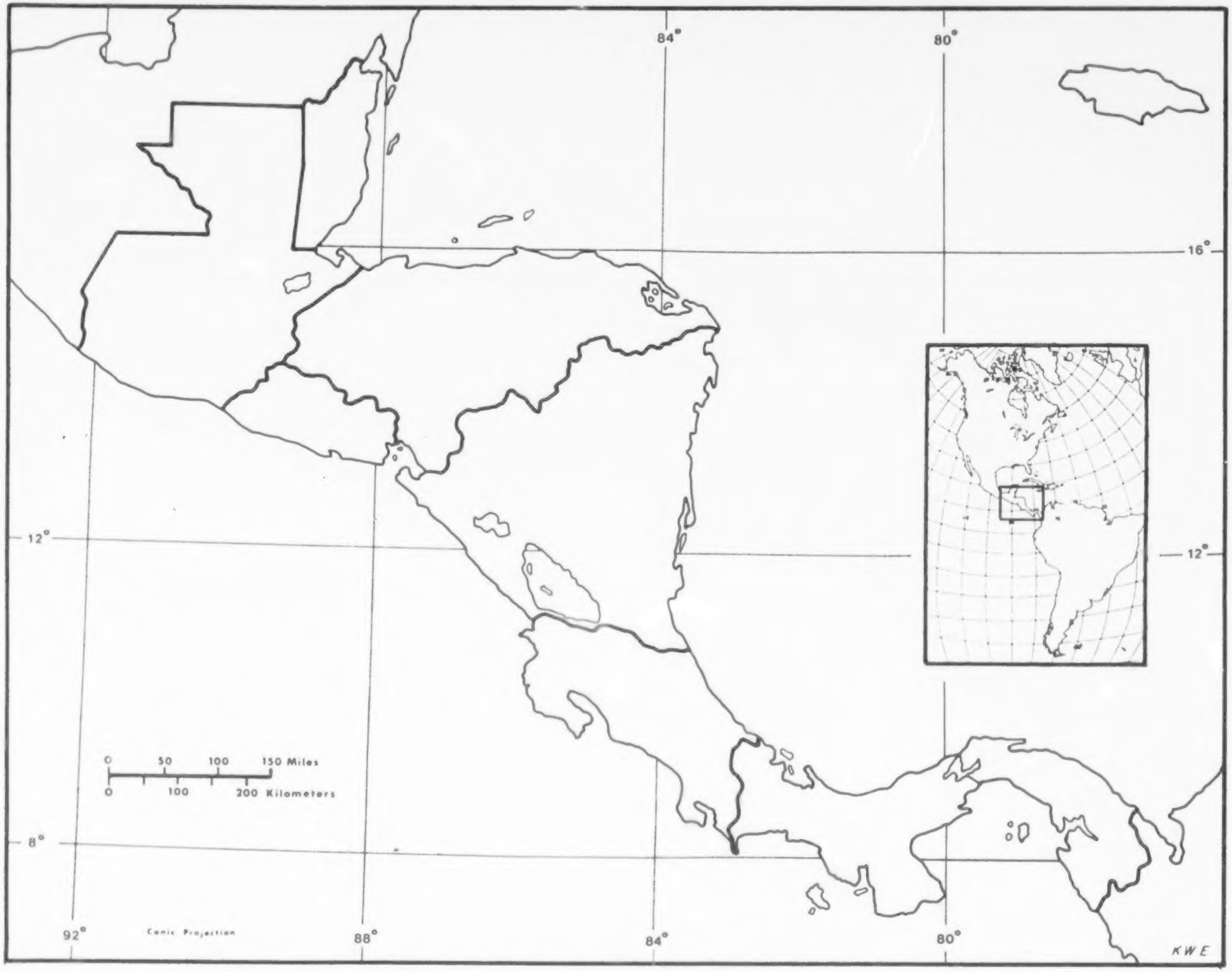
South America


80°
60°
50°
40°
10°
0°
10°
20°
30°
40°
0 400 800 Miles
0 400 800 1200 Kilometers
Lambert Azimuthal Equal Area Projection
KWE
80°
60°
50°
40°
30°
50°

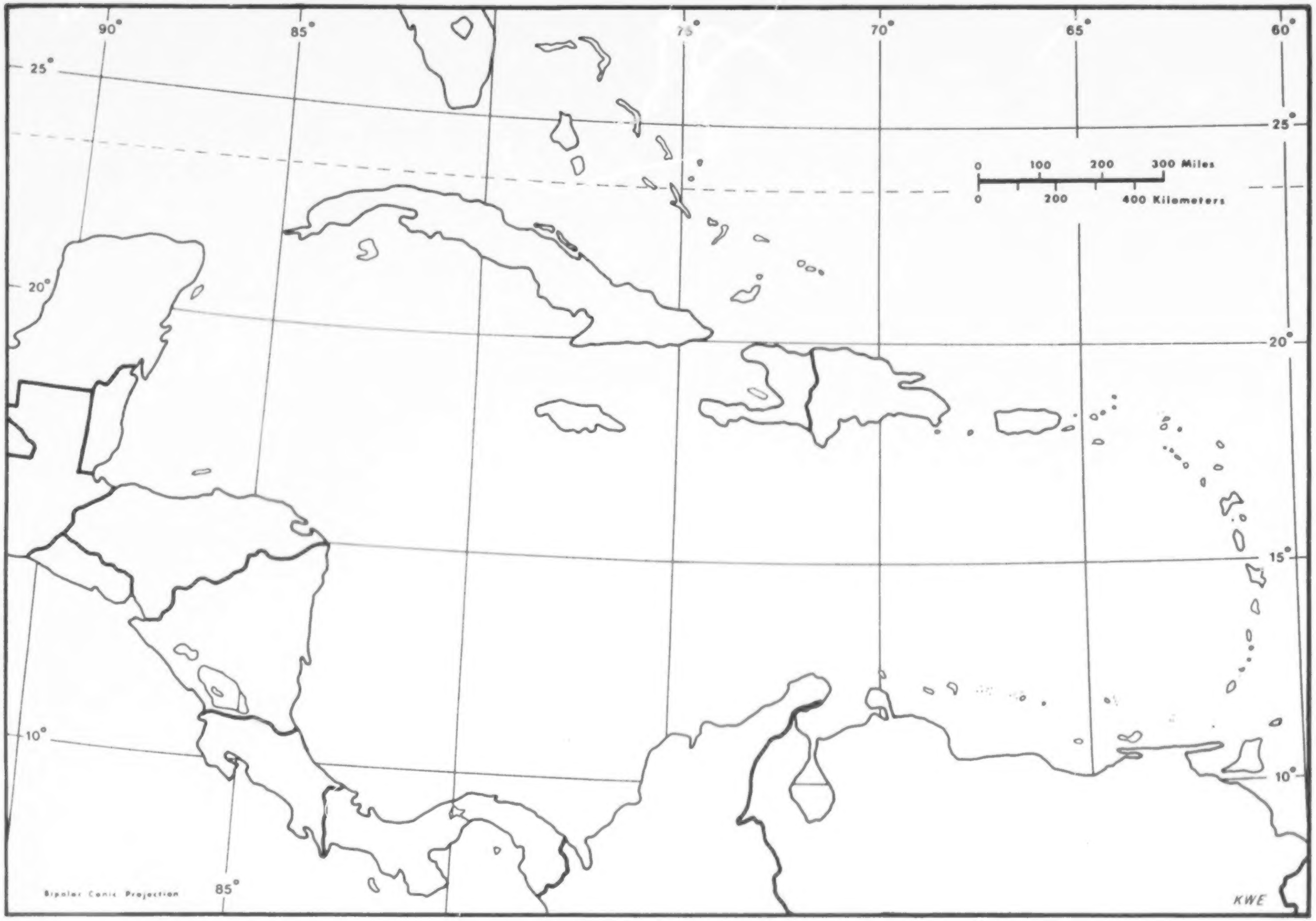
Middle America (mainland)


30°
30°
20°
10°
10°
110°
100°
90°
80°
0 200 400 Miles
0 200 400 600 Kilometers
Lambert Azimuthal Equal Area Projection
KWE

Central America, Panama & Belize


84°
80°
16°
12°
8°
92°
88°
84°
80°
0 50 100 150 Miles
0 100 200 Kilometers
Conic Projection
KWE

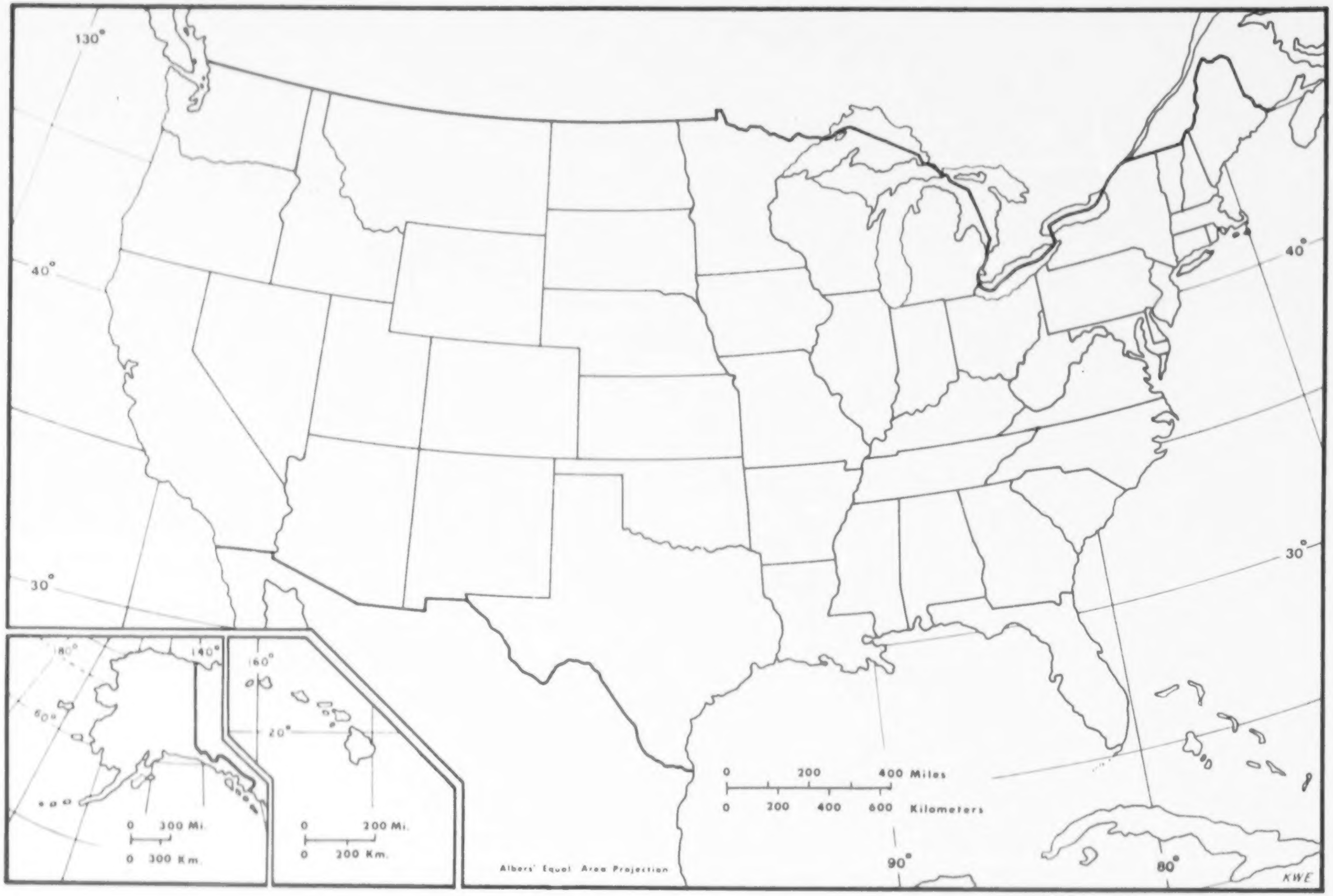
Caribbean


90°
85°
75°
70°
65°
60°
25°
20°
15°
10°
0 100 200 300 Miles
0 200 400 Kilometers
Bipolar Conic Projection
KWE

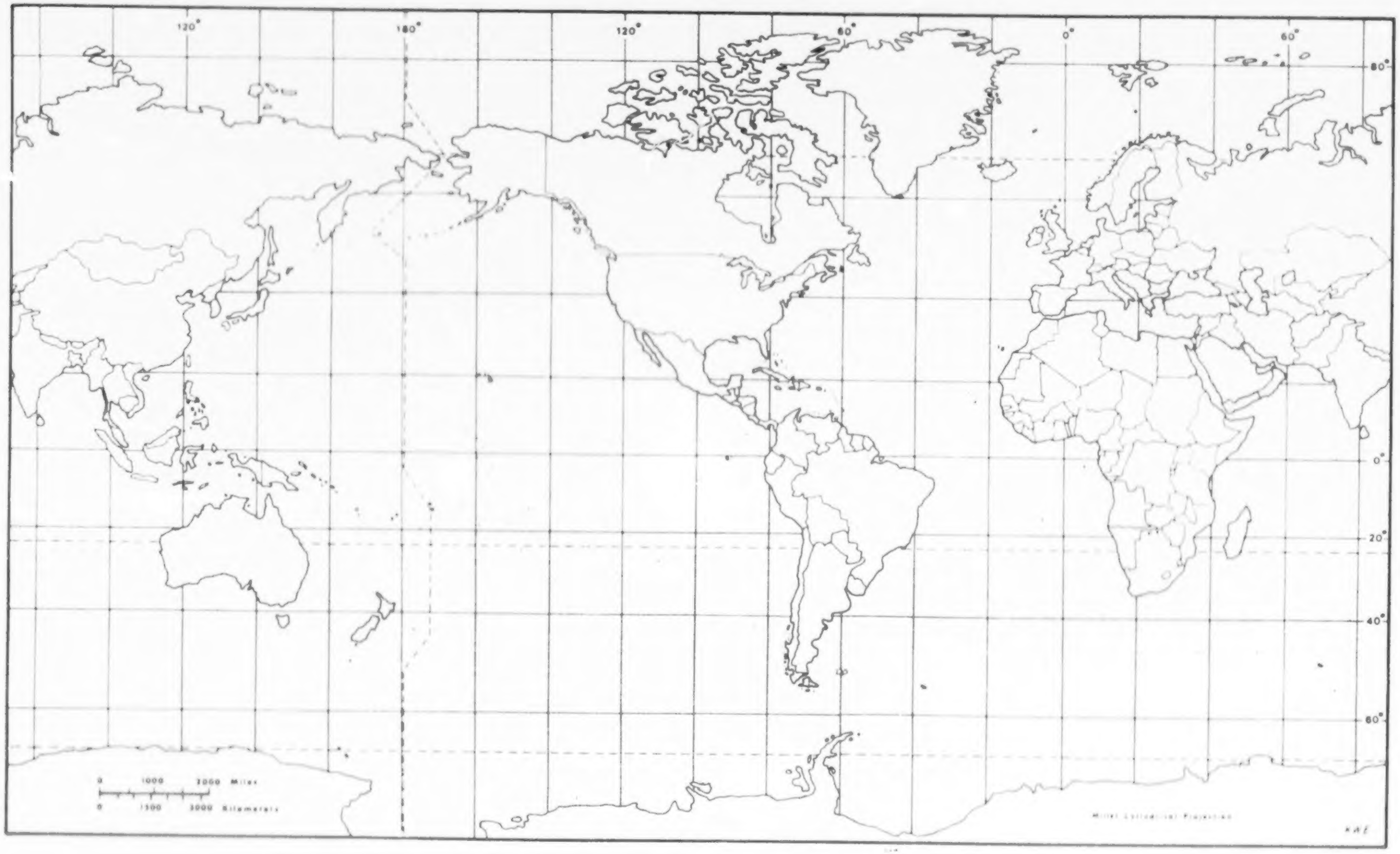
267

268

United States


130°
40°
40°
30°
30°
180°
140°
60°
160°
20°
0 300 Mi.
0 300 Km.
0 200 Mi.
0 200 Km.
0 200 400 Miles
0 200 400 600 Kilometers
90°
80°
Albers' Equal Area Projection
KWE

The World


120°
180°
120°
60°
0°
60°
80°
0°
20°
40°
60°
0 1000 2000 Miles
0 1500 3000 Kilometers
Miller Cylindrical Projection

Appendix B: Selected Sources on the Americas

Tom L. Martinson
Auburn University
Auburn, AL

Finding appropriate classroom literature on the Western Hemisphere can sometimes be daunting. This contribution is designed to introduce some sources that teachers might use to find information to develop lessons and teaching materials about the United States, Canada, Latin America, and specialized subjects within these regions. We have selected some of the most readily available textbooks and data sources for inclusion in this list, but many other sources may be used as well.

Some Representative Textbooks

School textbooks, especially the teachers' editions, often include bibliographies of materials that relate to the subject or region covered. Each state has established a process by which textbooks are evaluated and adopted, so they vary by state. Teachers can refer to their state list for the titles of textbooks currently available at elementary and secondary levels.

College-level textbooks also offer good background information about Canada, the United States, and Latin America. See, for example:

Birdsall, Stephen S. and John W. Florin. *Regional Landscapes of the United States and Canada*. 3rd ed. New York: John Wiley, 1987.

Bromely, Rosemary D.F. and Ray Bromley. *South American Development: A Geographical Introduction*. Cambridge: Cambridge University Press, 1982.

Conzen, Michael P., ed. *The Making of the American Landscape*. Boston: Unwin Hyman, 1990.

Cronon, William. *Changes in the Land: Indians, Colonists, and the Ecology of New England*. New York: Hill & Wang, 1983.

James, Preston E. and C. W. Minkel. *Latin America*. 5th ed. New York: Wiley, 1986.

Metcalfe, William, ed. *Understanding Canada: A Multidisciplinary Introduction to Canadian Studies*. New York: New York University Press, 1982.

Mitchell, Robert D. and Paul A. Groves, eds. *North America: The Historical Geography of a Changing Continent*. Totowa, NJ: Rowman & Littlefield, 1987.

Morris, Arthur. *South America*. 3rd ed. Totowa, NJ: Barnes & Noble, 1987.

Patterson, J.H. *North America: A Geography of the United States and Canada*. 8th ed. New York: Oxford University Press, 1989.

Richardson, Bonham C. *The Caribbean in the Wider World, 1492-1992: A Regional Geography*. Cambridge: Cambridge University Press, 1992.

Siemens, Alfred H. *The Americas: A Comparative Introduction to Geography*. North Scituate, MA: Duxbury, 1977.

Watts, David. *The West Indies: Patterns of Development, Culture and Environmental Change Since 1492*. Cambridge: Cambridge University Press, 1987.

West, Robert C., John P. Augelli, Thomas D. Boswell, William K. Crowley, Gary S. Elbow, and Ernst C. Griffin. *Middle America: Its Lands and Peoples*. 3rd ed. Englewood Cliffs, NJ: Prentice-Hall, 1989.

White, C. Langdon, Edwin J. Foscue, and Tom L. McKnight. *Regional Geography of Anglo-America*. 6th ed. Englewood Cliffs, NJ: Prentice-Hall, 1985.

Zelinsky, Wilbur. *The Cultural Geography of the United States*. rev. ed. Englewood Cliffs, NJ: Prentice-Hall, 1992.

Selected Popular Works

Popular works also provide information about the Western Hemisphere that can add spice to classroom presentations. Some examples include:

Garreau, Joel.*Edge City: Life on the New Frontier*. New York: Doubleday, 1991.

---. *The Nine Nations of North America*. Boston: Houghton Mifflin, 1981.

Moon, William Least Heat. *Blue Highways: A Journey into America*. Boston: Little, Brown, 1983

---. *PrairyErth: A Deep Map*. Boston: Houghton Mifflin, 1991.

Viola, Herman J. and Carolyn Margolis, eds. *Seeds of Change: A Quincentennial Commemoration*. Washington, DC: Smithsonian Institution, 1991.

Bibliographies, Statistical Sources, and Atlases

There are many bibliographies in which teachers can find geographical content information to employ in their classrooms. Such bibliographies can be found in large public or university libraries.

Statistical sources, such as the following, provide the raw material for many social science and science lessons.

Canada Yearbook. Ottawa: Dominion Bureau of Statistics. (annual)

Encyclopedia Canadiana. Ottawa: Canadiana Publishing Company.

Granberry, Julian. *Encyclopedia Caribbeana: A Research Guide*. Detroit: Omnigraphics, 1991.

U.S. Bureau of the Census. *Statistical Abstract of the United States, 1878-* . Washington, DC: Government Printing Office, 1879- . (annual)

U.S. Bureau of the Census. *City and County Data Book, 1949- . A Statistical Abstract Supplement*. Washington, DC: Government Printing Office, 1952- . (Every few years)

U.S. Bureau of the Census. *Historical Statistics of the United States: Colonial Times to 1970. Bicentennial Edition*. 3rd ed. Washington, DC: Government Printing Office, 1975.

Wilkie, James, Enrique Ochoa, and David E. Lorey, eds. *Statistical Abstract of Latin America*. Los Angeles: University of California at Los Angeles, 1955- . (annual)

Atlases are vital to geographical study, both on the national and state levels. Some examples include:

Allen, James P. and Eugene J. Turner. *We the People: An Atlas of America's Ethnic Diversity*. New York: Macmillan, 1988.

Cobb, David A. *State Atlases: An Annotated Bibliography*. Chicago, IL: CPL Bibliographies, 1983.

Garrett, Wilbur E., ed. *Atlas of North America: Space Age Portrait of a Continent*. Washington, DC: National Geographic Society, 1985.

Garrett, Wilbur E., ed. *Historical Atlas of the United States*. Washington, DC. National Geographic Society, 1988.

Harris, R. Cole, ed. *Historical Atlas of Canada, Vol. 1: From the Beginning to 1800*. Toronto: University of Toronto Press, 1987.

Lombardi, Cathryn L. and John V. Lombardi with K. Lynn Stoner. *Latin American History: A Teaching Atlas*. Madison: University of Wisconsin Press, 1983.

Rooney Jr., John F., Wilbur Zelinsky, and Dean R. Louder, eds. *This Remarkable Continent: An Atlas of United States and Canadian Society and Culture*. College Station, TX: Texas A&M University Press, 1982.

U.S. Geological Survey. *The National Atlas of the United States of America*. Washington, DC: U.S. Geological Survey, 1970.

On-Line Bibliographical Sources

Searching on-line databases for bibliographical information on geographical topics can be rewarding. Many school systems and major libraries now have access to electronic information sources. Teachers are encouraged to take advantage of such facilities where available to search for additional source materials on the Western Hemisphere and geography.

Appendix C: Contributors

Guest Editors

- **Tom L. Martinson** is professor of geography and head of the department at Auburn University in Alabama. He did his undergraduate work at the University of Oregon and received his Ph.D. from the University of Kansas. He is a specialist in Latin American geography and was editor of the 1990 Conference of Latin Americanist Geographers *Benchmark* volume.
- **Susan Brooker-Gross** is associate professor and head of the Department of Geography at Virginia Polytechnic Institute and State University. She received her B.A. and M.A. from Bowling Green State University and her Ph.D. from the University of Illinois. She has written on teaching geography with fiction, and on spatial patterns in commuting, gender and daycare trips.

Cartographer

- **Kenneth Engelbrecht** is assistant professor of geography at Central Missouri State University. He received his B.A. from University of Wisconsin-Madison, M.A. from Northern Michigan University and Ph.D. from University of Nebraska-Lincoln. A consulting editor for the *Missouri Geographer*, his fields of special interest are cartography, remote sensing/GIS, and urban geography. He has produced numerous maps for both government and private agencies.

Essay and Learning Activity Authors

- **Claudia Barros** es graduada en Geografía (1987) y becaria del IPGH (OEA) para el Curso Internacional de Postgraduado en Geografía Politica. Actualmente es Profesora en la Cátedra de Geografía Humana I en la Carrera de Profesora de Geografía (S.A. de Padua, Buenos Aires, Argentina) y realiza la Licenciatura en Antropología Social.
- **Tom Beaman** and **Teresa Squires Osborne** are both teachers in the Social Studies Department of Reynolds High School, Troutdale, Oregon. Tom received his B.S. in History from the University of Oregon in 1982, and his M.S. in History and Teaching from the University of Oregon in 1988. Teresa received her B.S. in History and Political Science from the University of Oregon in 1983, and her M.S. in Political Science from Portland State University in 1990.
- **Robert S. Bednarz** is an Associate Professor of Geography at Texas A&M University and edits the *Journal of Geography*. **Sarah W. Bednarz** is co-coordinator of the Texas Alliance for Geographic Education.
- **Joseph W. Bencloski** is a professor in the Department of Geography and Regional Planning at Indiana University of Pennsylvania. He received his Ph.D. in Geography from The Pennsylvania State University, and his research focuses on population geography. He also serves as editor of *Perspective*, the NCGE newsletter.
- **Marty Bock** received her Ph.D. in American Studies from St. Louis University. She has attended two summer geography institutes and served as a teacher consultant for a summer institute at Southwest Texas State University. She also helped develop the geography curriculum for North East Independent School District in San Antonio.

- **César Caviedes** is a professor in the Department of Geography at the University of Florida. He received his M.S. from the Catholic University of Chile and his Ph.D. from the University of Freiburg in Germany. He specializes in the geography of South America and environmental systems.
- **Jack Child** is professor of Spanish and Latin American Studies at The American University, Washington, D.C. He was born of American parents in Buenos Aires, Argentina, and lived in South America for 18 years before coming to the United States to attend Yale University; he later obtained his Ph.D. in international relations of Latin America from The American University.
- **Dennis Conway** received his B.A. from Cambridge University and his M.A. and Ph.D. from the University of Texas at Austin. He is Associate Professor of Geography and Latin American and Caribbean Studies at Indiana University, Bloomington. He has written widely on Caribbean urbanization, development and population geographies.
- **Kimberly Crews** is director of the Population Education Program at the Population Reference Bureau Inc. (PRB), a private, nonprofit, research and educational organization. She has been with the PRB for six years.
- **Roger Dendinger** received a B.A. in English from the University of South Alabama, an M.A. from Clemson University, and an M.S. in Geography from South Dakota State University. He is now working on a Ph.D. in Geography at the University of Tennessee.
- **Gary S. Elbow** is professor of geography and Director of the Latin American Area Studies program at Texas Tech University. Professor Elbow has conducted research in Central America and the Andean republics and is the author or co-author of several geography and social studies textbooks.
- **Barbara Fredrich** is a professor of geography at San Diego University. She earned her B.A. in geography from the University of Wisconsin, Madison, and both her M.A. and Ph.D. in geography from the University of California, Los Angeles. Her research activities broadly encompass cultural biogeography, Latin America and geographic education.
- **Russel L. Gerlach** is professor of Geography at Southwest Missouri State University in Springfield, Missouri. His research interests are in cultural geography with a specific focus on rural ethnic groups and settlement patterns, and historical geography.
- **Linda Greenow** is Associate Professor of Geography at the State University of New York The College at New Paltz. She teaches and writes about Latin America, particularly Peru and Mexico where she has lived, worked and carried out research on historical population and economic geography.
- **Richard Hansis** received a B.A. degree in Latin American studies from the University of New Mexico, an M.A.from the University of Florida and a Ph.D. in geography from The Pennsylvania State University. His long term interest in the environment and development in Latin America has broadened to include natural resource issues in the Pacific Northwest as the result of his position as academic coordinator at Washington State University at Vancouver.
- **David C. Hodge** received his Ph.D. from The Pennsylvania State University. He has taught for the past 15 years at the University of Washington, where he is an associate professor of geography. His research work includes an emphasis on the internal structure of cities and urban transportation.
- **Terence Lee** was born in England. He obtained a Ph.D. from the University of Toronto. For the last 20 years he has lived in Santiago, Chile, working for the United Nations. He has written numerous books and articles on resource management in Latin America.
- **Isabel Loyo Guillen** es Licenciada en Ciencias de la Educación con especialización en historia y geografía. Su educación postgraduada incluye el curso do capacitación en ciencias sociales, 1985, FLACSO, Quito, y XVIII Curso International de Geografía Política, 1990, CEPEIGE, Quito. Lugar de trabajo: Colegio Experimental "24 de Mayo," escuela asociada a la UNESCO, como profesora de ciencias sociales. Miembro de la Comisión de Experimentación, Investigación y Proyectos CEIP.

- **James Marran** is a teacher of geography at New Trier High School (Winnetka, Illinois) where he also chairs the Social Studies. Mr. Marran, long active in geographic education, is coordinator of the Geographic Education National Implementation Project and a member of the Curriculum and Instruction Committee of the National Council for Geographic Education. He has written journal articles and reviews for publications across the social studies and recently co-authored a United States history text.
- **Sallie Marston** received her B.A. in geography from Clark University and her M.A. and Ph.D. in geography from the University of Colorado. She is presently a faculty member at the University of Arizona. She has worked extensively on the impact of urban growth and change on neighborhoods, especially neighborhood politics.
- **Janet Henshall Momsen** has taught in Canada, Brazil, and Costa Rica and has been Senior Lecturer at the University of Newcastle upon Tyne England. She is currently professor at the University of California, Davis.
- **Jay Pierson** is a geography, psychology, and sociology teacher at William B. Travis High School in Austin, Texas. he is a 1989 recipient of the Distinguished Teaching Achievement Award from the National Council for Geographic Education.
- **Carolyn V. Prorok** earned her Ph.D. in geography from Louisiana State University. Her training includes certificates in elementary, secondary and special education. She is an assistant professor of Geography at Slippery Rock University in Pennsylvania.
- **Quinton G. Priest** earned his B.A. in American History at the University of California, Irvine; and his M.A. and Ph.D. in Chinese History and Literature at the University of Arizona. He is currently the chair of the History Department at Green Fields Country Day School in Tucson, Arizona, where he teaches World Geography, AP United States History, and East Asian History and Culture.
- **Cathy Riggs-Salter** has been a secondary history and geography teacher for 17 years. From 1985-87, she directed a National Geographic Society Pilot Program at Audubon Junior High School in Los Angeles, California. Since 1987 she has worked as a consultant, working on the development of geography educational materials and technologies.
- **Bill Romey** is a geologist by training at the University of California, Berkeley. He has done field work in Oregon, California, the Adirondacks, and Norway. He currently works at St. Lawrence University in Canton, New York.
- **James M. Rubenstein** is professor of geography at Miami University (Ohio). He is the author of two books, as well as numerous articles concerning the automotive industry and urban planning.
- **Christopher L. Salter** is a landscape geographer who loves the exploration inherent in all landscape analysis. Salter is professor and chair of the Department of Geography, University of Missouri in Columbia.
- **Katherine K. Sandmeier** is a liaison in the National Geographic Society's Geography Education Program. Kay was a social studies teacher at Niwot High School in Longmont, Colorado, for 10 years before taking a job with the Society.
- **Martha B. Sharma** is a geographer currently teaching at the National Cathedral School for Girls in Washington, D.C. In addition to her work in the classroom, she is Vice President of Publication and Products for the National Council for Geographic Education. As a consultant in geographic education and curriculum development, she has written and edited numerous works related to geographic education.
- **Mike Speer** received a B.A. and an M.A. from the University of Texas at Arlington. He currently teaches government and economics at Jesuit College Preparatory School at Dallas.
- **Frederick H. Walk** teaches at Normal Community High School in Normal, Illinois, and is active at the state and national levels in the National Geographic Society's Alliance movement.

- **Barney Warf** earned his B.A. and M.A. degrees at U.C.L.A. and his Ph.D. in geography from the University of Washington (Seattle). He currently holds a position as Assistant Professor of Geography at Kent State University, Ohio. His research interests include economic geography, political economy, social theory, regional development, and the world system.
- **Barbara Weightman** earned her B.Ed. at the University of British Columbia, and her M.A. and Ph.D. from the University of Washington. She is a professor of geography at California State University, Fullerton. She teaches world, Asian, cultural, social, and urban geography and has recently developed a course on the geography of religion.
- **Brenda L. Whitsell** teaches social studies and math at Sumner Academy in Gallatin, Tennessee. She is a graduate of the National Geographic Society Summer Institute and a Teacher Consultant for the Tennessee Geographic Alliance Summer Institutes.
- **Fred Willman** is a seventh-grade world geography teacher at Jefferson Junior High School in Naperville, Illinois. He is a National Geographic Society Teacher Consultant and is the editor of a book to be published through the Illinois Geographic Alliance about the geography of Illinois.